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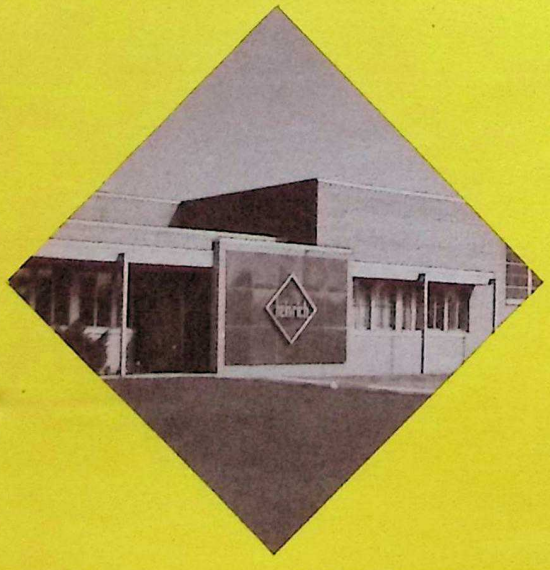
CATALOG
NO. 180

# VISES

GRIP-MASTER QUICK-ACTING VISES • AIR VISES • SELF-CENTERING VISES • CROSS-HOLE DRILL JIGS • AIR COLLET CHUCK • METAL CUTTING TOOLS



HEINRICH TOOLS INC., 2707 SOUTH MEMORIAL DRIVE, RACINE, WISCONSIN 53403 — PHONE 414/634-4229

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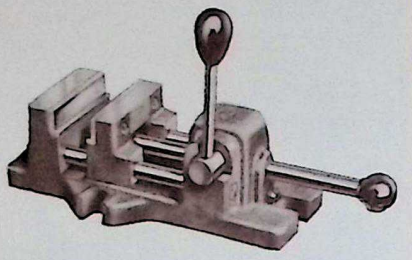

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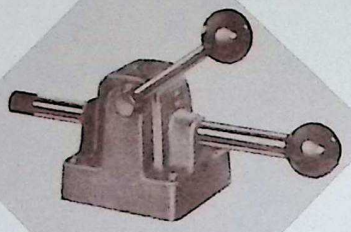

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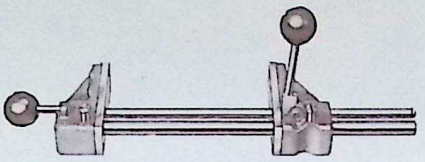

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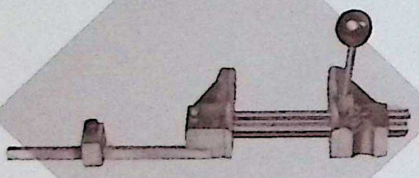

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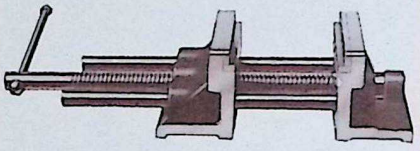

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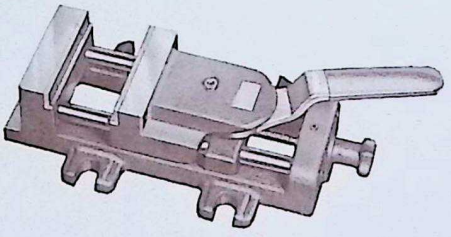

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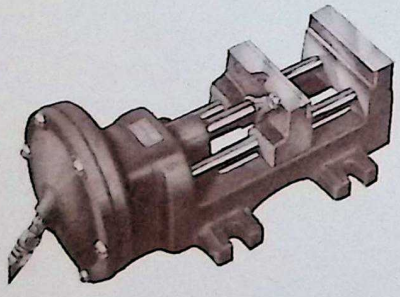

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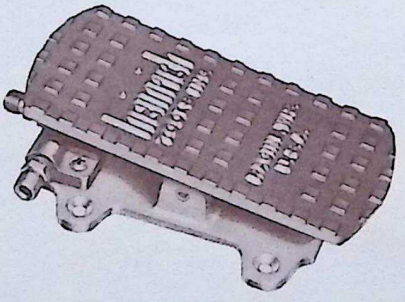
## GENERAL SALES POLICY

Heinrich products are sold only through authorized Heinrich Distributors. Distributorships are selective and limited in line with our published distribution policy. Factory representatives are located throughout the country to assure personal service for each distributor and customer.



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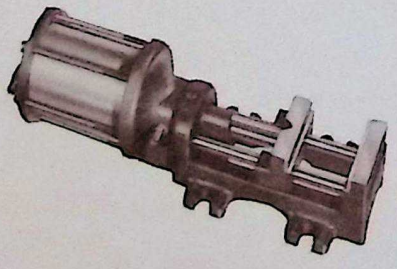

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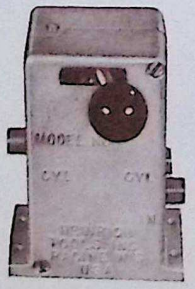

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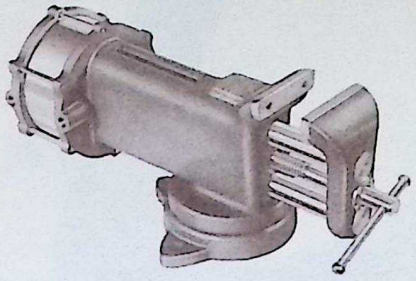

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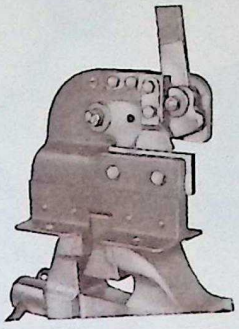

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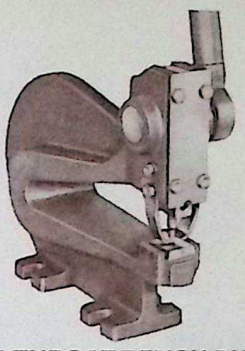

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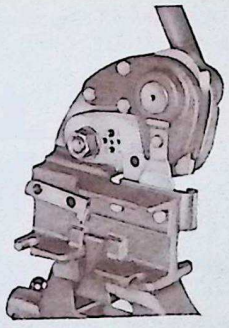
**PATENTS**

Heinrich products are covered by the following U. S. Patent Numbers: 2,362,067, 2,424,313, 2,392,820, 2,612,805, 2,638,804, 2,679,177, 2,764,046, 3,143,356. Other Patents Pending.



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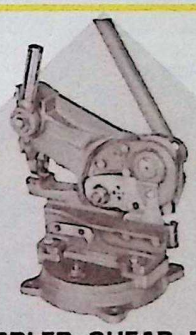

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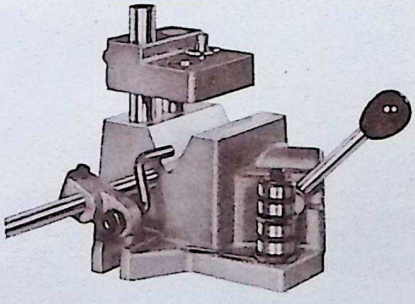

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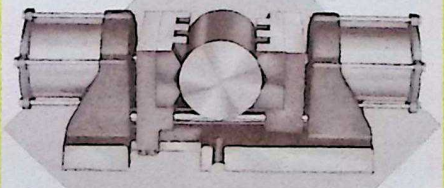

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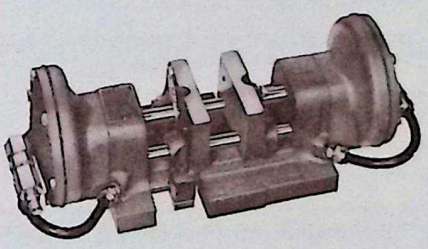

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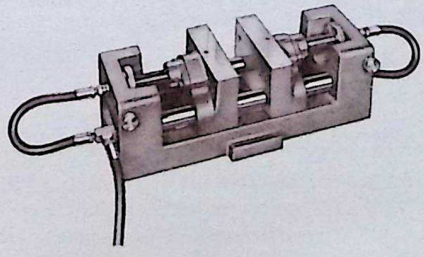

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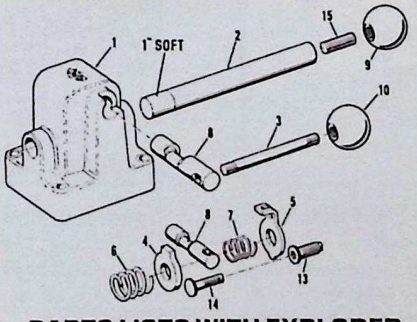


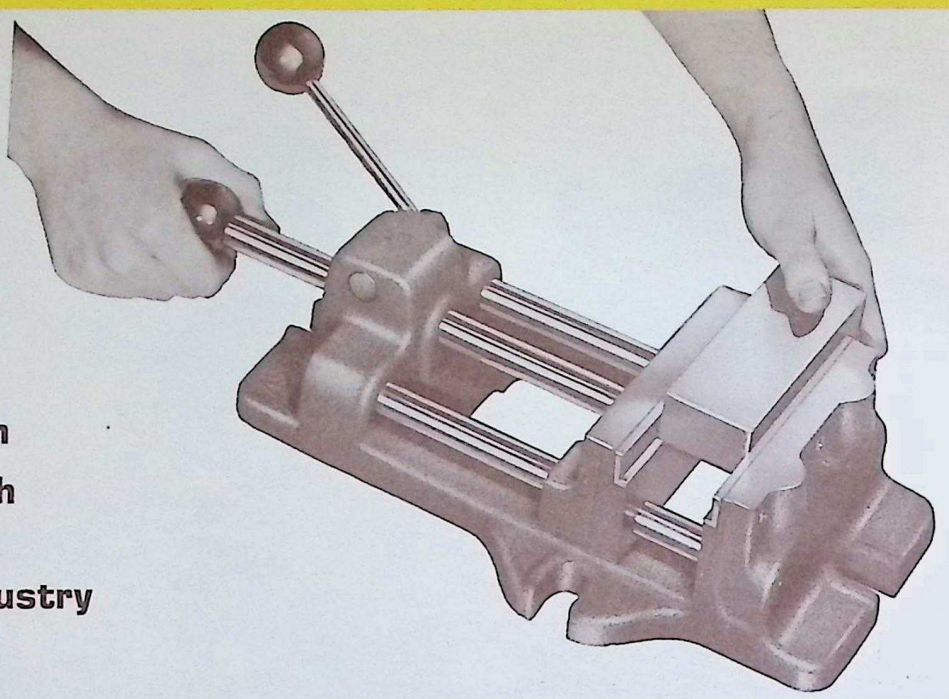

**PARTS LISTS WITH EXPLODED VIEWS AND INSTRUCTIONS**
*Page Numbers Shown in Italics*

**GUARANTEE**

Heinrich products are guaranteed for the purpose for which manufactured for a period of one year, against any true manufacturing defect, whether in workmanship or material. Our guarantee will not apply on any material that has been altered or changed by outside mechanics.

# Grip-Master VISES

Parts list with exploded view and instructions on page 24.

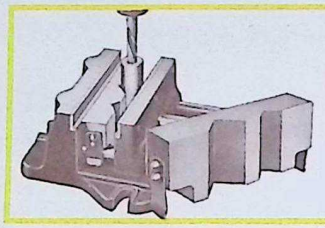


## Patented "screwless" operation

## Introduced by Heinrich in 1946

## Now a standard in industry everywhere

A simple push or pull on the center bar knob sets the jaw in position. An easy press on the locking lever cams jaw ahead 3/32", exerting holding pressure, adjustable from 400 to 1600 lb. Recessed parallel soft steel jaw inserts levels work, can be removed to accommodate jig and fixture components. Hollow base for clear through drilling. Hardened and ground bars and locking mechanism.

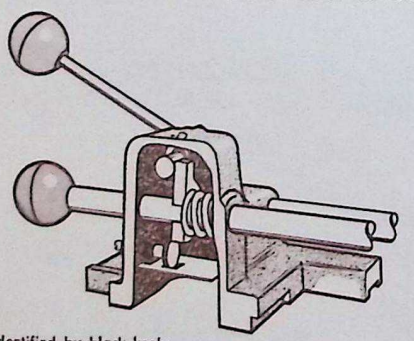


**V-BLOCK ATTACHMENT**

Available for all models . . . hardened and ground . . . insures a firm grip on round stock.

## YOUR CHOICE OF LOCKING MECHANISMS . . .

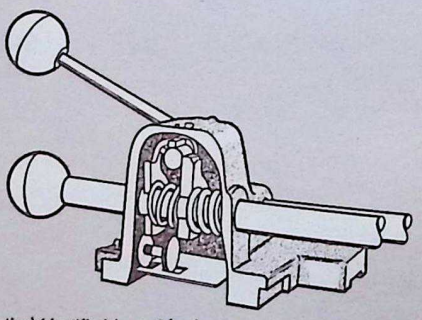
**STANDARD "SV" SERIES LOCKING MECHANISM**



STANDARD identified by black knobs

For General Vise and Fixture Use. A press on the locking lever actuates the eccentric crank which tilts the locking ring, thereby gripping the entire circumference of the center bar, forcibly moving the jaw forward against the workpiece. Raising the locking lever to vertical position permits the spring to return the locking ring to neutral position, allowing the jaw to slide back, releasing the workpiece. Adjusting screw, locked by cover plate, controls amount of pressure. (See instructions on page 24).

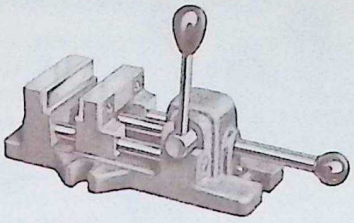
**"PA" SERIES LOCKING MECHANISM, WITH PUMPING ACTION**



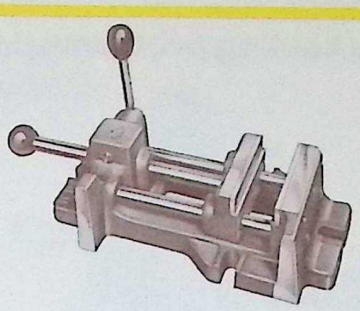
PA (Pumping Action) identified by red knobs

Operator is able to advance the jaw forward by "pumping" the locking lever, thereby "taking up" on compressible materials such as warped castings, wood or metal laminations, plastics, etc. The addition of a holding ring holds the jaw against work with 200-350 pounds pressure while the locking lever is at a 60-80 degree angle. The holding spring returns the holding ring to neutral position.

## PRICES and WEIGHTS:

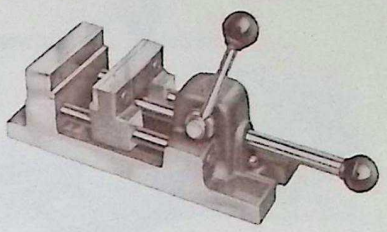


| Model | Shipping Weight | Net Price |
|---|---|---|
| 3-SV Vise | 10 lb. | $57.24 |
| 3-PA Vise | 10 lb. | 64.64 |
| 3-VB V-Block | 1 lb. | 15.57 |
| 6-SV Vise | 34 lb. | 104.27 |
| 6-PA Vise | 34 lb. | 114.11 |
| 6-VB V-Block | 3 lb. | 23.16 |
| 8-SV Vise | 51 lb. | 144.72 |
| 8-PA Vise | 51 lb. | 157.49 |
| 8-VB V-Block | 5 lb. | 27.94 |



| Model | Shipping Weight | Net Price |
|---|---|---|
| 4-GM Vise | 20 lb. | $79.22 |
| 4-GMPA Vise | 20 lb. | 86.17 |
| 4-VB V-Block | 1 lb. | 18.36 |

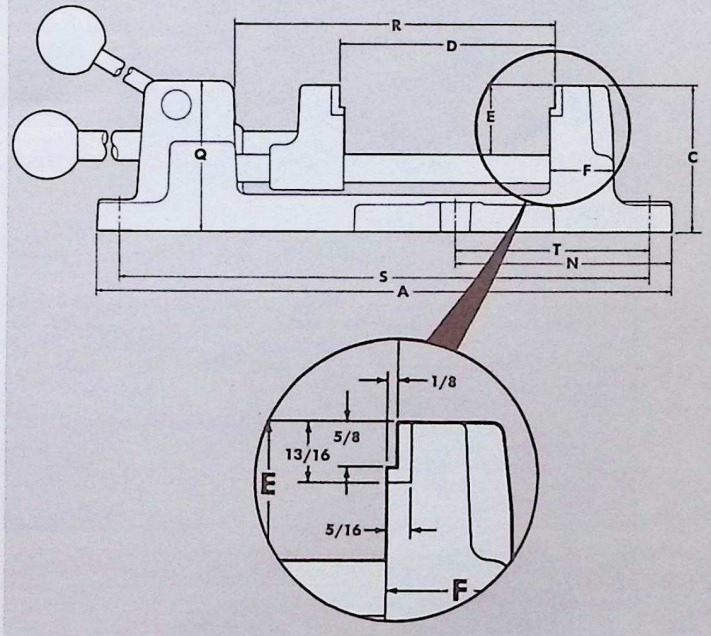
Extensions on one side of body casting precision ground square with jaw inserts for machining from top or one side without resetting work.

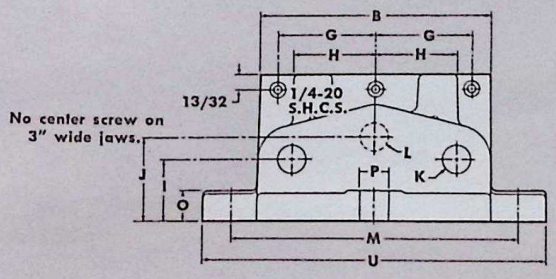


| Model | Shipping Weight | Net Price |
|---|---|---|
| 3-TS Vise | 10 lb. | $61.45 |
| 3-VB V-Block | 1 lb. | 15.57 |
| 4-TS Vise | 18 lb. | 82.19 |
| 4-VB V-Block | 1 lb. | 18.36 |

Jaw sides are precision-ground at right angles to recessed jaws for machining from top and both sides without resetting work. "SV" Locking Mechanism only.

## DIMENSIONS:




| | 3-SV 3-TS 3-PA | 4-GM 4-TS 4-GMPA | 6-SV 6-PA | 8-SV 8-PA |
|---|---|---|---|---|
| A | 8 15/16 | 11 3/4 | 14 11/16 | 17 7/8 |
| B | 3 | 4 | 6 | 8 |
| C | 2 3/4 | 3 1/4 | 3 3/4 | 4 7/16 |
| D | 3 | 4 11/16 | 6 3/16 | 8 3/16 |
| E | 1 1/4 | 1 5/16 | 1 13/16 | 2 |
| F | 1 1/8 | 1 3/16 | 1 5/8 | 1 3/4 |
| G | 15/16 | 1 23/32 | 2 1/2 | 3 1/4 |
| H | 1 5/64 | 1 3/8 | 2 1/8 | 3 |
| I | 1 1/4 | 1 5/8 | 1 9/16 | 2 |
| J | 1 1/2 | 2 1/16 | 2 1/8 | 2 3/4 |
| K | .493 | .617 | .742 | .989 |
| L | .493 | .617 | .742 | .742 |
| M | 4 1/8 | 5 | 7 3/8 | 9 3/4 |
| N | 3 1/2 | 3 3/4 | 5 1/2 | 6 3/4 |
| O | 1 1/16 | 7/8 | 1 3/16 | 1 5/16 |
| P | 1/2 | 1 7/32 | 1 1/16 | 1 1/16 |
| Q | 2 7/8 | 3 7/16 | 3 13/16 | 4 9/16 |
| R | 3 7/8 | 6 5/16 | 8 | 10 1/4 |
| S | 8 3/16 | 10 13/32 | 13 7/16 | 15 13/16 |
| T | 3 1/8 | 3 1/4 | 4 11/16 | 5 5/8 |
| U | 4 3/4 | 6 3/8 | 8 7/8 | 10 3/4 |

Stock is provided in castings for the addition of keyway slots if desired.

If dimensions are critical, ask for their certification. Full-scale template sheets available on request.

SEE PAGE 6 FOR EXAMPLES OF HOW GRIP-MASTER CUTS COSTS AND INCREASES PRODUCTION.

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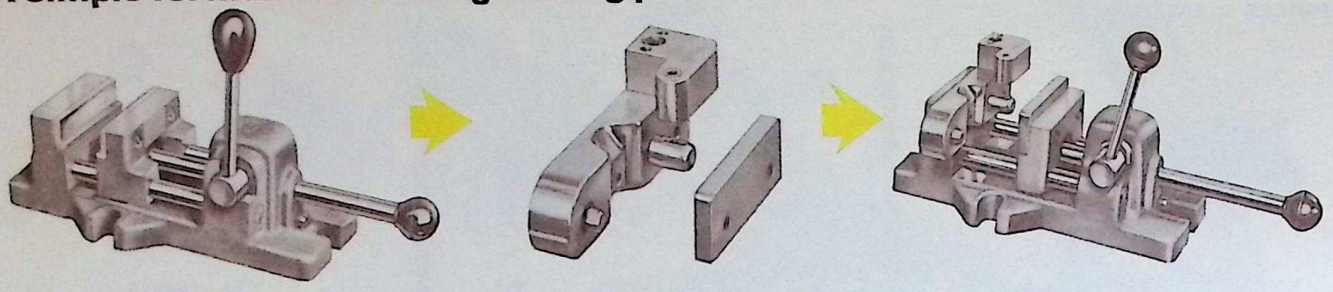
# Grip-Master VISE APPLICATIONS

## A simple formula for solving tooling problems . . .



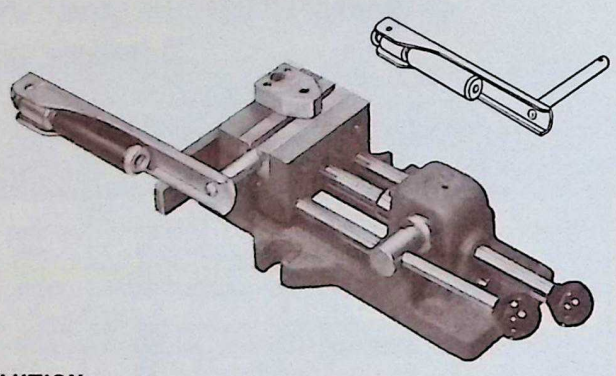
COST-CONSCIOUS TOOL DESIGNERS RECOMMEND STARTING WITH GRIP-MASTERS . . .

THEN, IT IS NECESSARY ONLY TO DESIGN AND MAKE FIXTURE DETAILS AS SHOWN.

THE RESULT IS A QUICKLY MADE, ACCURATE AND LOW-COST PRODUCTION TOOL.

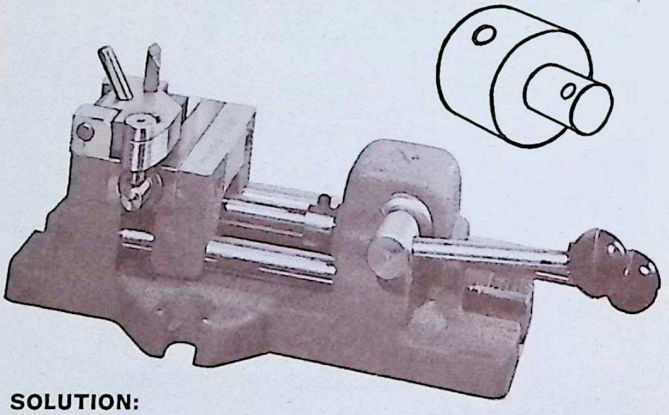
## Cuts tooling costs up to 75%

**PROBLEM:**
Drill locating hole in sprocket shaft.



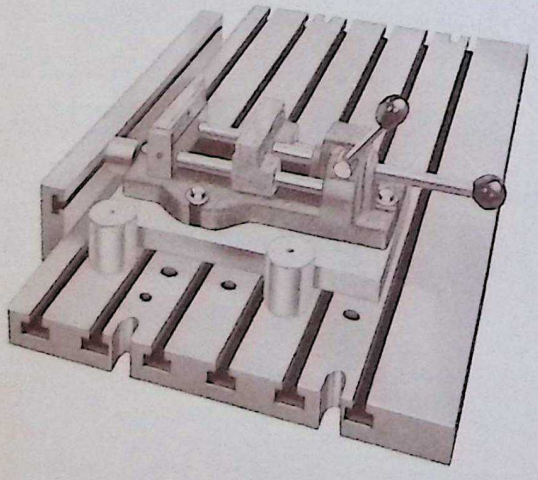
**SOLUTION:**
Customer originally estimated cost of tooling at $300.00. Heinrich 3-SV Grip-Master used as a drill jig base reduced cost to only $70.00. Positive locating from lever arm provided by bar screwed on jaw of vise. It's economical too . . . because the same vise can be used again for multiple jigs, simply by interchanging false jaws. Only 5 hours required to build complete jig.

**PROBLEM:**
Drill (1) .277" dia. and (1) 3/32" dia. holes; countersink and tap 5/16-24, in pivot block.



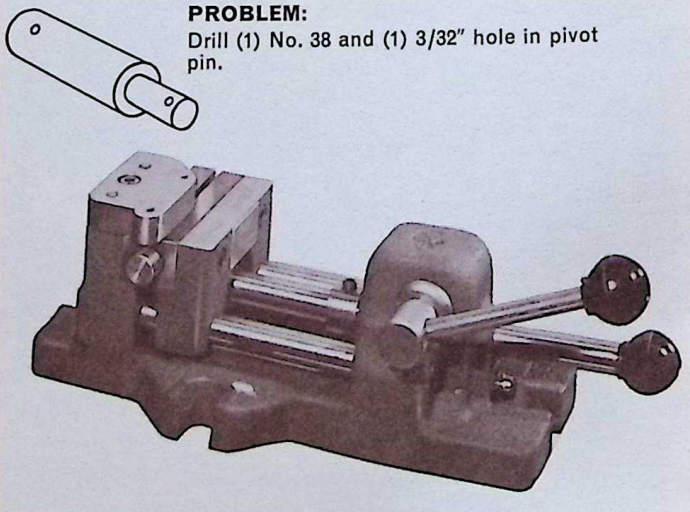
**SOLUTION:**
Heinrich 3-SV Grip-Master Vise as a jig base. Just 16 hours of labor provided a light unit, easily movable from one spindle to another on the drill press.

One-hand clamping provided by adding collar on center bar to limit jaw return travel . . . leaves other hand free to load and unload.



Rail and stop pins locate 4-GM Grip-Master Vise on T-slotted universal baseplate of N/C tooling. The vise is bolted to a precision-ground sub-base.

**PROBLEM:**
Drill (1) No. 38 and (1) 3/32" hole in pivot pin.



Heinrich 3-SV Grip-Master used as base structure, equipped with false jaws and bushing plate. This combination provided sure locking . . . very fast loading and unloading, with one-hand clamping. A positive stop operates against shoulder of part piece.

# Grip-Master FIXTURE LOCKS

Parts list with exploded view and instructions on page 26.

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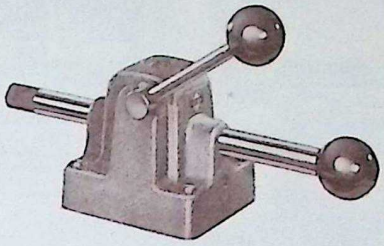
## Simplify Jig and Fixture design
## Eliminate special locking details

The same locking mechanism (both "SV" and "PA" types, as described on page 4) used in Grip-Master Vises is available in two sizes of Grip-Master Fixture Locks. Long travel provides plenty of chip clearance, easy loading and unloading. Gets into hard-to-reach places. Special locking bars available up to 24 inches. Bar soft 1" on end for adapting to fixture.



**PRICES and WEIGHTS:**

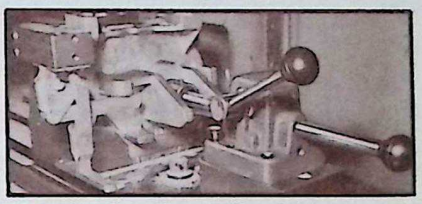
| Model | Standard Bar Length* | Shipping Weight | Net Price |
|---|---|---|---|
| 2-FL | 9" | 4 lb. | $34.72 |
| 2-PA | 9" | 4 lb. | 44.29 |
| 9-FL | 10" | 8 lb. | 41.49 |
| 9-PA | 10" | 8 lb. | 54.25 |

* Special bars available in 12, 14, 16, 18, 20 and 24 in. lengths. Prices on page 26.

**PROBLEM:** Step drill 11/32" and No. F hole in switch cover casting to make opening for push-button.

**SOLUTION:** 9 FL Grip-Master Fixture Lock — used as the locking unit to butt casting against back of fixture. Dowel pins support bottom of casting for positioning part before locking in position. SIMPLE, INEXPENSIVE CONSTRUCTION. Easy set-up. LONG TRAVEL PROVIDES PLENTY OF CLEARANCE for chip removal and coolant flow. Positive clamping.

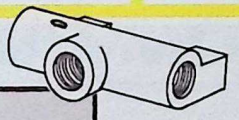
**PROBLEM:** Mill 1/8" of stock from aluminum casting.

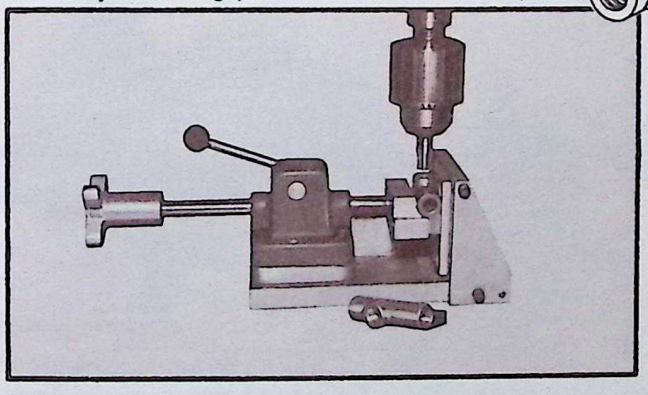


**SOLUTION:** 9 PA Grip-Master Fixture Lock — used to hold aluminum casting in fixture. Three carbide-tipped milling cutters are being used to remove approximately 1/8" of stock. Tolerances being held within .002".

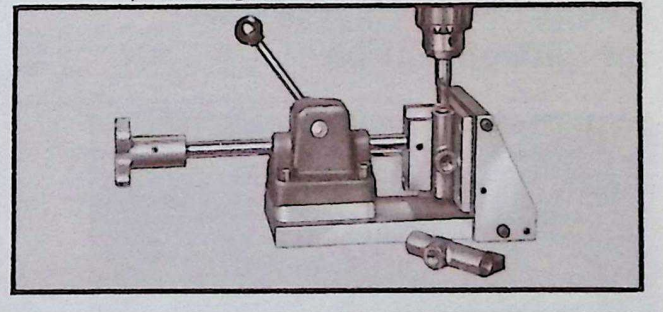
**ADVANTAGES:** Simple, inexpensive construction of fixture. Long travel provides easy loading and unloading. Clamping at any position on the bar compensates for variations in size of work. Locking unit not affected by coolant or chips.

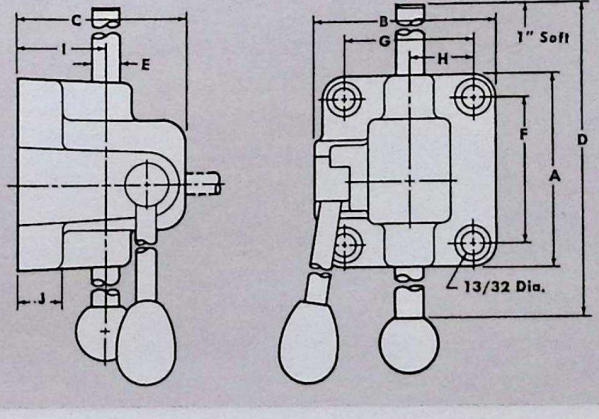
**PROBLEM:** Tap (2) 1/4 N.P.T. thread holes in air valve body die casting (one in end and one on side).





**SOLUTION:** Model 2FL Grip-Master Fixture Lock used as a clamping unit in a simple, inexpensive turn-over jig . . . permits turning part, yet allows fixture base to be securely and safely clamped to table at all times. Fast and easy loading and unloading . . . lessens operator fatigue.






**DIMENSIONS:**

| | 2-FL 2-PA | 9-FL 9-PA |
|---|---|---|
| A | 3 5/16 | 4 5/16 |
| B | 3 3/16 | 3 11/16 |
| C | 2 7/8 | 3 15/16 |
| D | 9 | 10 |
| E | .493 | .742 |
| F | 2 1/2 | 3 1/2 |
| G | 2 3/16 | 2 7/8 |
| H | 1 3/32 | 1 7/16 |
| I | 1 1/2 | 2 1/8 |
| J | 3/4 | 1 1/4 |

If dimensions are critical, ask for their certification. Full-scale template sheets available on request.

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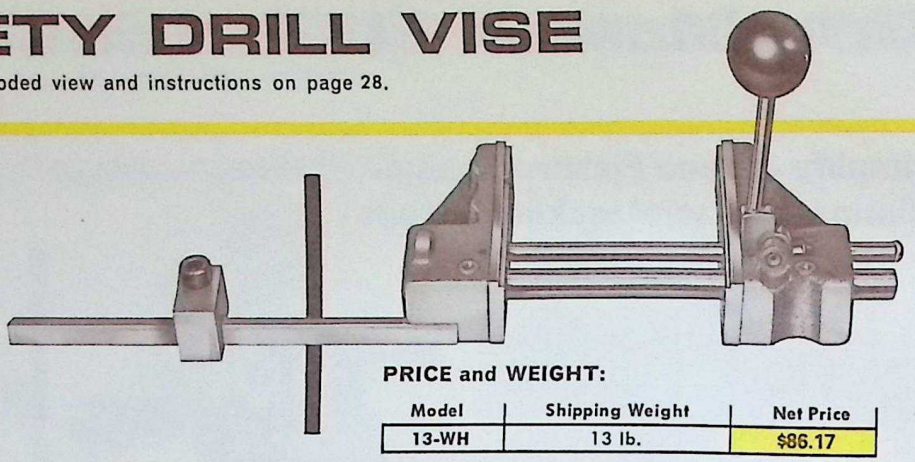
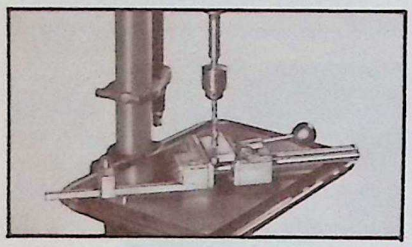
# SAFETY DRILL VISE

Parts list with exploded view and instructions on page 28.

## Quick-Acting vise Opens to 12-3/4"



Sets instantly by sliding movable jaw into position. Press on lever advances jaw, locking workpiece securely. Built-in recessed parallel jaw inserts hold work square. Vertical V-Groove in jaw provides positive grip on rounds.

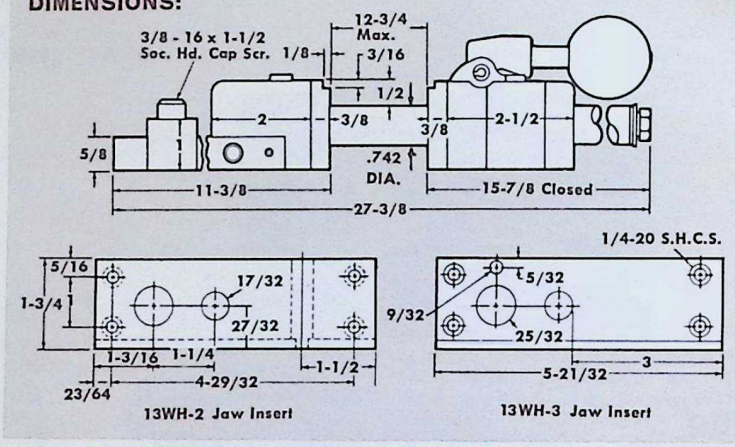


Mounts on drill press table, eliminating danger of unit spinning or breaking loose from table. Swings off table when not in use.

**PRICE and WEIGHT:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| 13-WH | 13 lb. | $86.17 |

**DIMENSIONS:**

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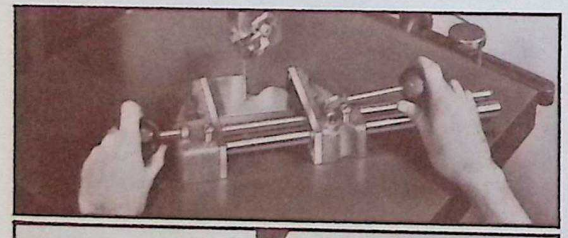
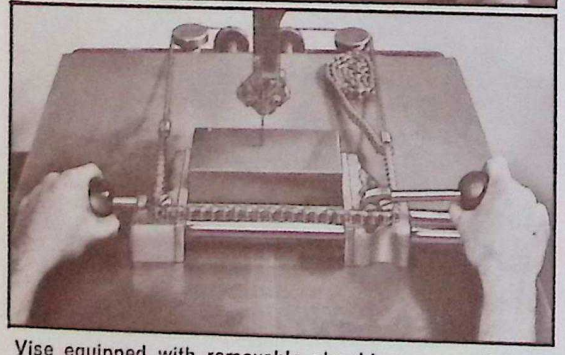
# BAND SAW VISE

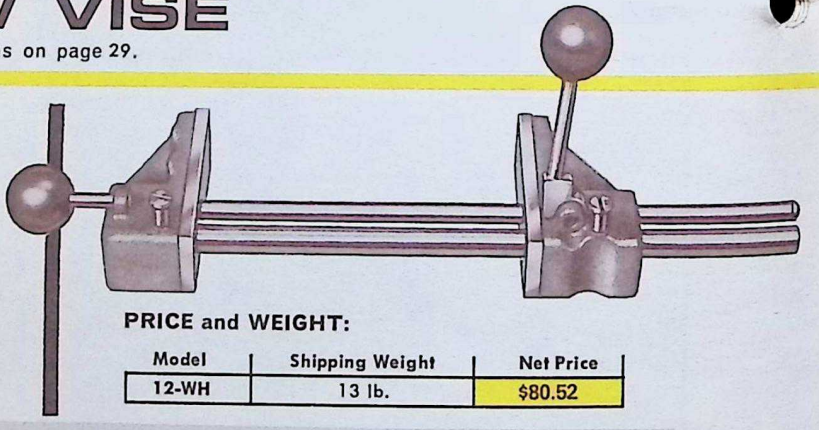
Parts list with exploded view and instructions on page 29.

## Keeps hands clear of saw for safe operation





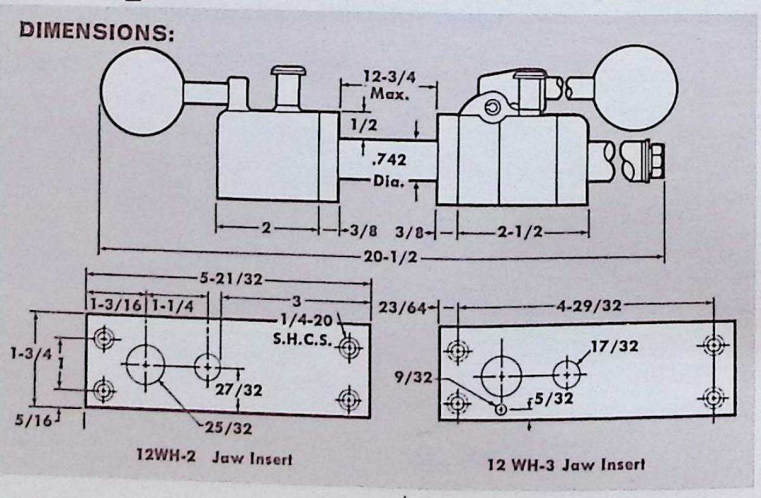
Vise equipped with removable shoulder screws for accommodating chain feed operation.



**PRICE and WEIGHT:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| 12-WH | 13 lb. | $80.52 |

**DIMENSIONS:**



# DRILL PRESS VISE

Parts list with exploded view and instructions on page 28.

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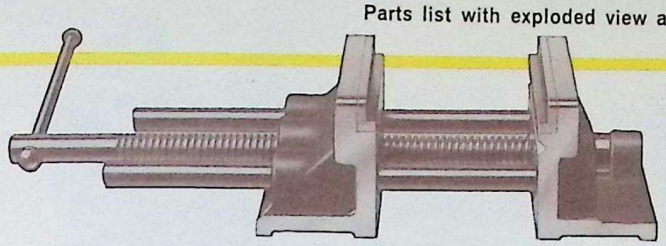
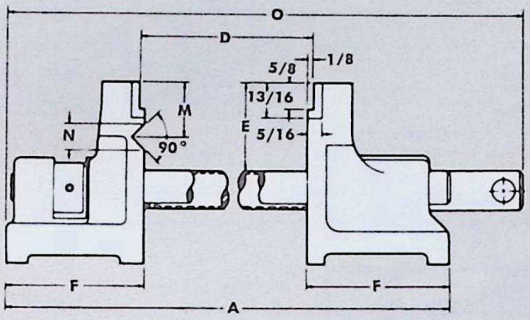
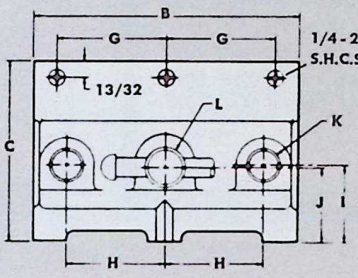


The Heinrich screw-action vise can be used from three sides. Work is leveled quickly on recessed parallel jaw inserts. Ample clearance from parallels to table, plus widely spaced jaw guide bars, permits drilling clear through work. Jaw sides are precision ground at right angles to jaw inserts for accurate machining from any direction without resetting work. Built-in V-groove in models 20 and 30 holds round stock firmly for side and end drilling.

**PRICES and WEIGHTS:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| 10 | 5 lb. | $48.61 |
| 20 | 21 lb. | 86.17 |
| 30 | 36 lb. | 119.69 |




**DIMENSIONS:**

| | 10 | 20 | 30 |
|---|---|---|---|
| A | 7 5/16 | 16 1/2 | 17 3/4 |
| B | 3 | 6 | 8 |
| C | 2 1/8 | 4 1/8 | 5 |
| D | 3 5/8 | 10 | 10 |
| E | 1 1/16 | 2 | 2 1/2 |
| F | 1 7/8 | 3 1/8 | 3 13/16 |
| G | 1 5/16 | 2 1/2 | 3 1/4 |
| H | 1 1/16 | 2 1/4 | 3 |
| I | 7/8 | 1 3/4 | 2 |
| J | 51/64 | 1 43/64 | 2 |
| K | .370 | .745 | .994 |
| L | 1/2-10 LH Acme | 7/8-6 LH Acme | 7/8-6 LH Acme |
| M | No V | 1 1/4 | 1 3/8 |
| N | No V | 9/16 | 1 1/16 |
| O | 8 | 17 5/8 | 18 |

Full scale template sheets available on request.

# CAMLOCK VISE

Parts list with exploded view and instructions on page 27.

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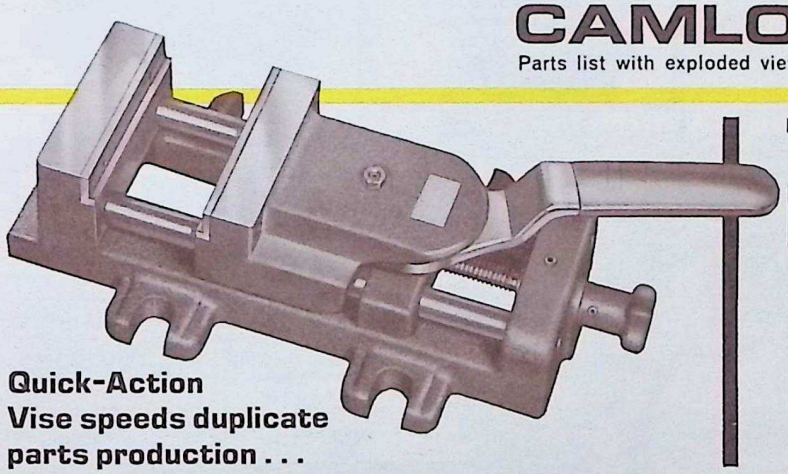
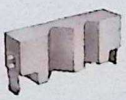


**Quick-Action Vise speeds duplicate parts production . . .**

**PRICES and WEIGHTS:**

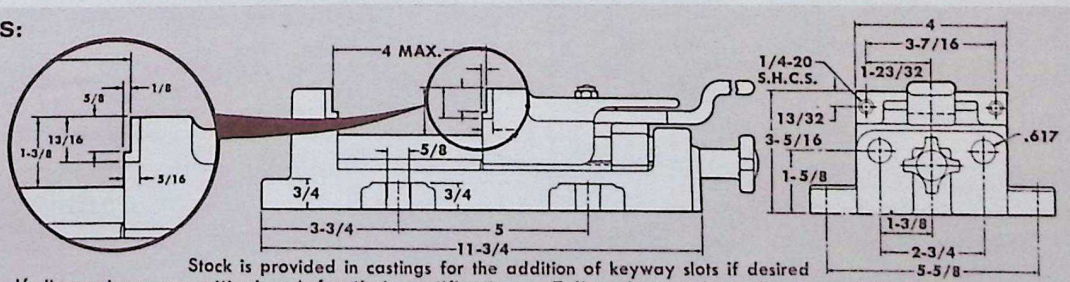
| Model | Shipping Weight | Net Price |
|---|---|---|
| 4-CL | 23 lb. | $120.89 |
| 4-VB | 1 lb. | 18.36 |



V-BLOCK
Hardened and ground — insures firm grip on round stock.

Hand knob quickly adjusts jaw to desired opening. A short, horizontal movement of the locking lever clamps or releases the part, providing one-hand operation. Handle locks in clockwise direction. Maximum travel, after setting — 5/16". Recessed parallel jaw inserts level work, can be removed to accommodate jig and fixture components. Hollow base for clear through drilling. Hardened and ground bars and eccentric parts.

**DIMENSIONS:**




Stock is provided in castings for the addition of keyway slots if desired

If dimensions are critical, ask for their certification. Full-scale template sheets available on request.

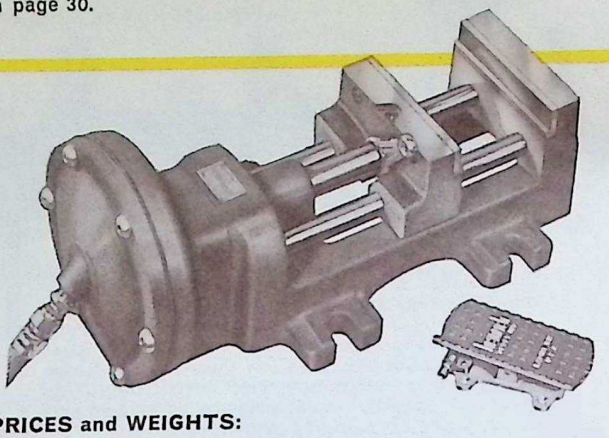
# AIR VISES ... single-acting cylinders

Parts list with exploded view and instructions on page 30.

## Precision machined Air Vises SPEED PRODUCTION ideal base structure for jigs and fixtures

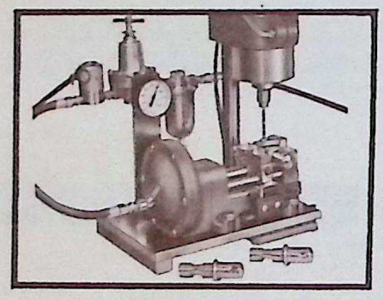
Diaphragm type, spring return air cylinder. Holding power, 15X Air Pressure (Example: 1500 lbs. at 100 psi.) Maximum operating pressure, 150 lbs. psi. Amount of pressure may be controlled to suit the operation by use of our No. R11-200-RLG Air Regulator. Maximum travel after setting — 3/8". For efficient operation, 1/16" travel is recommended. Ratchet operated, triple-lead thread adjusting screw quickly positions jaw at any point within the jaw opening, locked securely by set screw. Work leveled by soft steel recessed parallel jaw inserts, which can be removed to accommodate jig and fixture components. Hollow base for clear through drilling. Operates with No. 34-12CI Three Way Foot Treadle or No. 34-18 Three-Way Hand Valve. Two No. 34-14 hoses required to operate with hand or foot valves.

V-BLOCK ATTACHMENT
Hardened and ground . . . insures firm grip on round stock.

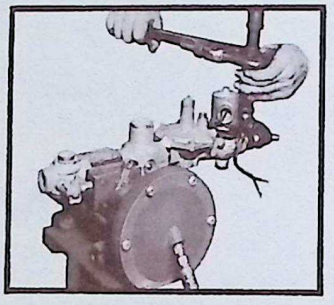


**PRICES and WEIGHTS:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| 33 Vise, Complete with No. 34-12CI Foot Treadle and two 5-ft. lengths of hose | 21 lb. | $126.45 |
| 33-A Vise only | 16 lb. | 93.58 |
| 3-VB V-Block | 1 lb. | 15.57 |
| 44 Vise, Complete with No. 34-12CI Foot Treadle and two 5-ft. lengths of hose | 30 lb. | 142.18 |
| 44-A Vise only | 24 lb. | 109.33 |
| 44-VB V-Block | 1 lb. | 18.36 |

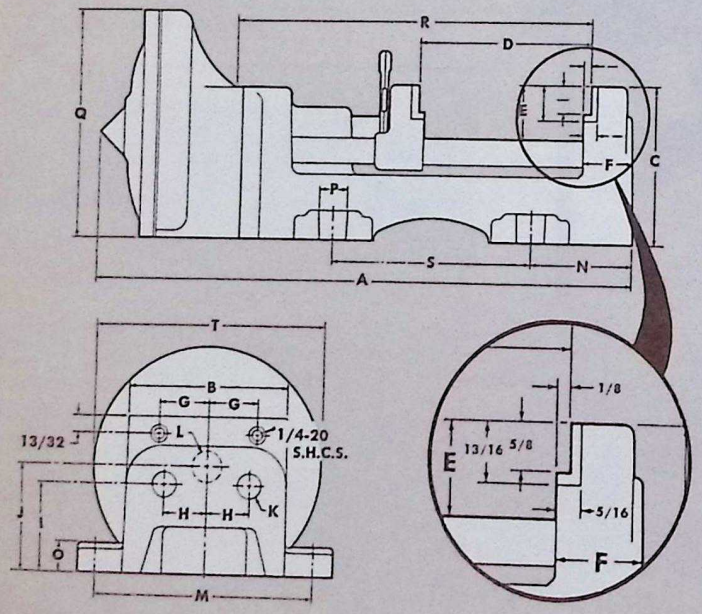


Heinrich Air Vise, used as a jig and fixture base, cuts designing and tooling costs . . . speeds up a drilling operation. Especially adaptable to automatic cycling with other pneumatic or electrical equipment.



The quick-grip, quick-release feature saves time and labor in assembling applications. Step on the foot pedal to instantly close the vise . . . step on the pedal again to release.

**DIMENSIONS:**




| | 33 | 44 |
|---|---|---|
| A | 10 1/4 | 13 1/2 |
| B | 3 | 4 |
| C | 3 13/16 | 3 3/4 |
| D | 3 1/8 | 4 5/8 |
| E | 1 1/4 | 1 5/16 |
| F | 1 1/4 | 1 1/4 |
| G | 1 5/16 | 1 1/4 |
| H | 1 5/64 | 1 5/64 |
| I | 2 5/16 | 2 1/8 |
| J | 2 5/16 | 2 5/16 |
| K | .493 | .617 |
| L | .742 | .742 |
| M | 4 1/8 | 5 5/8 |
| N | 1 5/16 | 2 3/8 |
| O | 1 1/16 | 3/4 |
| P | 1 7/32 | 2 1/32 |
| Q | 5 3/8 | 5 3/8 |
| R | 5 7/8 | 9 |
| S | 4 3/4 | 5 |
| T | 5 3/4 | 5 3/4 |

Stock is provided in casting for the addition of keyway slots if desired.

If dimensions are critical, ask for their certification. Full-scale template sheets available on request.

# AIR CLAMPS . . . single-acting cylinders

Parts list with exploded view and instructions on page 30.

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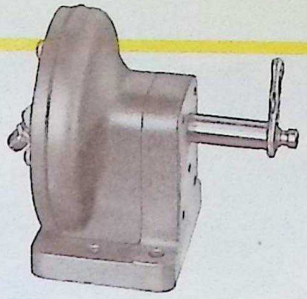
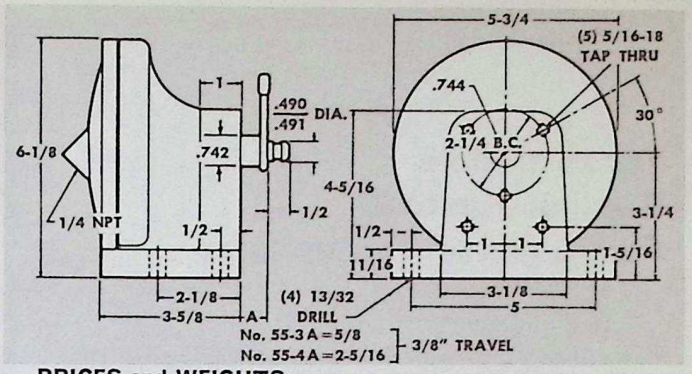


Grips with a force 15X Air Pressure (Example: 1500 lbs. at 100 psi.) Can be used on air supply lines with pressures up to 150 psi. Pressure may be controlled as needed by regulating air feed with No. R11-200-RLG Air Regulator. Operates with No. 34-12CI Three-Way Foot Treadle Valve, or No. 34-18 Three-Way Hand Valve. Two No. 34-14 hoses required to operate with hand or foot valves. Piston rod setting quickly adjustable to any point within 2-7/8" by means of a ratchet-operated, triple-lead thread adjusting screw.* Mounting holes provided for horizontal or vertical mounting.




**PRICES and WEIGHTS:**

| Model | Minimum Rod Extension* | Shipping Weight | Net Price |
|---|---|---|---|
| 55-3 Clamp only | 5/8 | 12 lb. | $76.89 |
| 55-4 Clamp only | 2 5/16 | 12 lb. | 76.89 |

# AIR ACCESSORIES

Parts list with exploded view and instructions on page 32.

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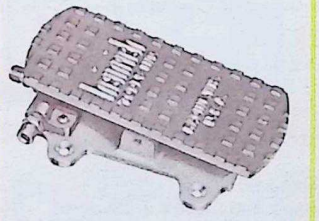
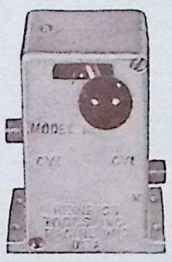


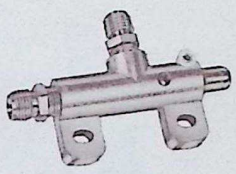
**No. 34-12CI .....5 lb.**
**FOOT TREADLE VALVE $21.04**

Foot-operated, three-way air valve, for instant, hand-free operation of Heinrich Air Vises or Clamps with single-acting air cylinders . . . (one or several units.) Treadle remains open or closed without constant foot pressure. 1/4" NPS male fittings. Four 1/4" mounting holes in base.



**No. 34-18 .....2 lb.**
**HAND VALVE..... $43.09**

Hand-operated, three-way air valve, for quick operation of Heinrich Units with single-acting air cylinders. Valve remains open or closed without constant hand pressure. 1/4" NPS male fittings.
Four 3/16" mounting holes in base.



**No. 34 .....1 lb.**
**AIR VALVE..... $7.83**

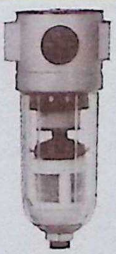
Three-way air valve for actuating single-acting air cylinders. Hardened steel plunger button, spring return, for cam operation. 1/4" NPS male fittings. Two 3/16" mounting holes.

**No. 37 .....1 lb.**
**QUICK EXHAUST VALVE..... $16.76**

Speeds up action of air cylinders. For mounting at air inlet of cylinder to provide automatic, quick exhaust of air, resulting in rapid piston rod return travel. Hose coupling provided on inlet, 1/4" NPS. Outlet to cylinder tapped 1/4" NPT. Poppet type valve. Maximum operating pressure — 150 psi.

**No. R11-200-RLG...3 lb.**
**AIR REGULATOR, WITH GAUGE..... $18.91**

For reducing air line pressure to control holding power of Heinrich Air Units. Pressure range — 2 to 125 psig. Inlet and outlet — 1/4" NPT.

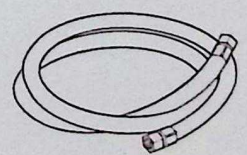


**No.F11-200-M3T....2 lb.**
**AIR FILTER..... $17.08**

Automatically removes corrosive moisture, abrasives and other solids from air lines. For pressures up to 150 psig. Manual drain. Inlet and outlet — 1/4" NPT.

**No. B11-221-M3L.....3 lb.**
**AIR FILTER/ REGULATOR..... $34.79**

Combines filter and regulator into one compact unit. 2 to 125 psig range. Inlet and outlet — 1/4" NPT. Automatic drain.



**No. 34-14 .....2 lb.**
**AIR HOSE..... $6.53**

For use with all Heinrich Air Units. 5-ft. length, 1/4" I.D., with 1/4" NPS female swivel fittings. 2 hoses required for single-acting units.

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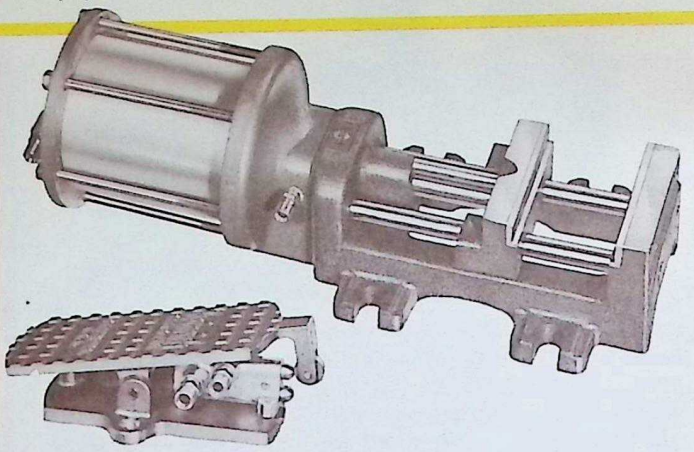
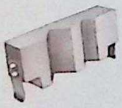
# AIR VISES . . . with double acting air cylinders

Parts list with exploded view and instructions on page 34.



## Three models
## Capacity up to 7"
## Full travel of jaw opening

Piston type air cylinder. Return of jaw under air pressure. Maximum operating pressure, 150 lbs. psi. Amount of pressure may be controlled to suit the operation by use of our No. R11-200-RGL Air Regulator. The jaw opening may be regulated by means of a stop rod attached to the back of the movable jaw. Simply cut off the rod to provide the desired opening. The rod stops against the vise body casting when the jaw is in the open position. Work leveled by soft steel recessed parallel jaw inserts, which can be removed to accommodate jig and fixture components. Hollow base for clear through drilling. Operates with No. 45-12CI Four-Way Foot Treadle or No. 45-18 Four-Way Hand Valve. Three No. 34-14 hoses required to operate with hand or foot valves.

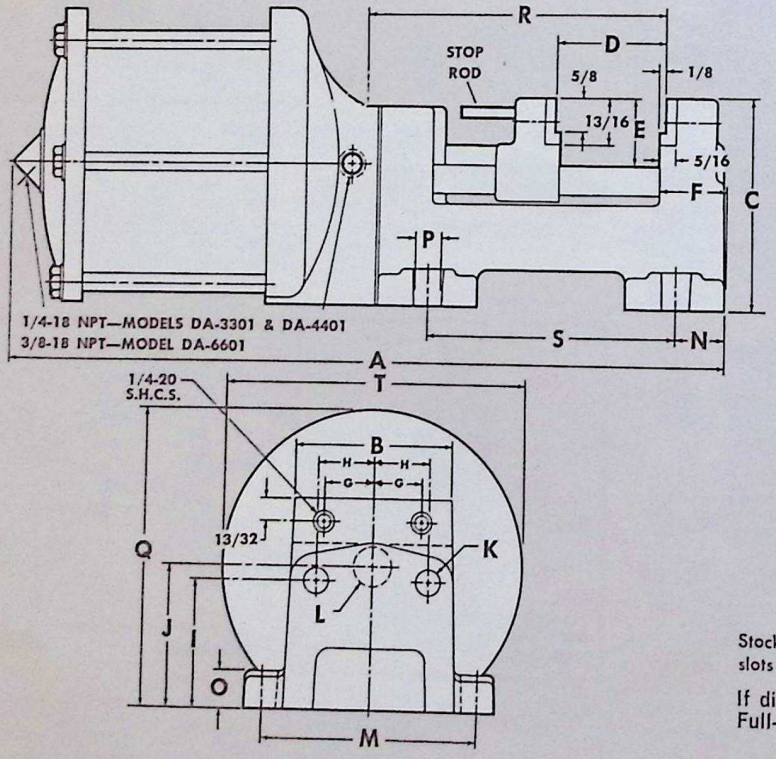


V-BLOCK ATTACHMENT
Hardened and ground . . . insures firm grip on round stock.

**PRICES and WEIGHTS:**

| Model | Shipping Weight | Power Factor | Net Price |
|---|---|---|---|
| DA-3301 Vise, Complete with No. 45-12CI Foot Treadle and three 5-ft. lengths of hose | 23 lb. | 15 X | $177.00 |
| DA-3301-A Vise only | 17 lb. | 15 X | 124.48 |
| 3-VB V-Block | 1 lb. | | 15.57 |
| DA-4401 Vise, Complete with No. 45-12CI Foot Treadle and three 5-ft. lengths of hose | 34 lb. | 15 X | 207.32 |
| DA-4401-A Vise only | 26 lb. | 15 X | 154.80 |
| 44-VB V-Block | 1 lb. | | 18.36 |
| DA-6601 Vise, Complete with No. 45-12CI Foot Treadle and three 5-ft. lengths of hose | 82 lb. | 19 X | 358.58 |
| DA-6601-A Vise only | 77 lb. | 19 X | 306.05 |
| 8-VB V-Block | 5 lb. | | 27.94 |

**DIMENSIONS:**




| | DA-3301 | DA-4401 | DA-6601 |
|---|---|---|---|
| A | 13 11/16 | 18 1/4 | 25 5/8 |
| B | 3 | 4 | 6 |
| C | 3 13/16 | 3 3/4 | 5 |
| D | 3 1/8 | 5 | 7 3/8 |
| E | 1 1/4 | 1 5/16 | 2 1/2 |
| F | 1 1/4 | 1 1/4 | 1 7/8 |
| G | 1 5/16 | 1 1/4 | 2 1/2 |
| H | 1 5/64 | 1 5/64 | 3 |
| I | 2 5/16 | 2 1/8 | 2 |
| J | 2 9/16 | 2 9/16 | 3 1/4 |
| K | .493 | .617 | .989 |
| L | .742 | .742 | .989 |
| M | 4 1/8 | 5 5/8 | 9 1/2 |
| N | 1 5/16 | 2 3/8 | 4 1/8 |
| O | 11/16 | 3/4 | 3/4 |
| P | 17/32 | 21/32 | 11/16 |
| Q | 5 3/8 | 5 3/8 | 6 17/32 |
| R | 5 7/8 | 9 | 9 7/8 |
| S | 4 3/4 | 5 | 5 1/2 |
| T | 5 3/4 | 5 3/4 | 6 3/8 |

Stock is provided in castings for the addition of keyway slots if desired.

If dimensions are critical, ask for their certification. Full-scale template sheets available on request.

# AIR CLAMPS . . . with double-acting cylinders

Parts list with exploded view and instructions on page 34.

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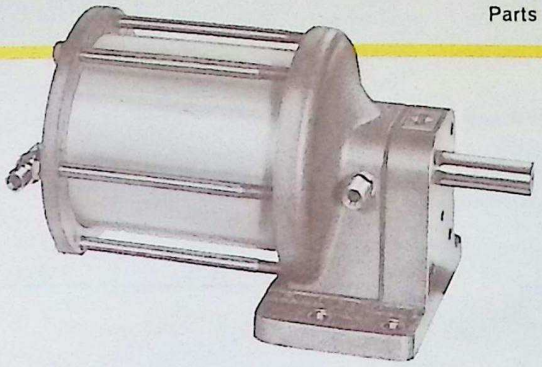
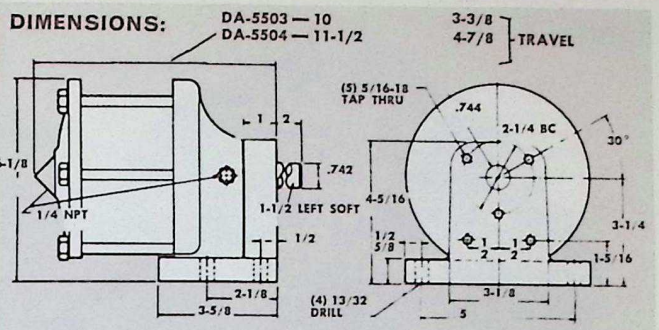


Long travel, piston type air cylinder. Return of piston rod under air pressure. Power factor up to 15X Air Pressure — maximum operating pressure 150 psi. Amount of pressure may be controlled to suit the operation by use of our No. R11-200-RGL Air Regulator. Operates with No. 45-12CI Four-Way Foot Treadle Valve, or No. 45-18 Four-Way Hand Valve. Three No. 34-14 hoses required to operate with hand or foot valves. Mounting holes provided for horizontal or vertical mounting.

**DIMENSIONS:**




DA-6607 dimensions shown in italics.

| Model | Shipping Weight | Power Factor | Net Price |
|---|---|---|---|
| DA-5503 | 13 lb. | 15X | $111.56 |
| DA-5504 | 14 lb. | 15X | 111.56 |
| | | | |

# AIR ACCESSORIES

Parts list with exploded view and instructions on page 33.

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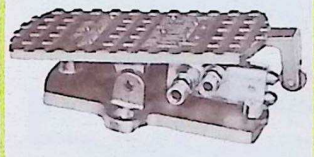
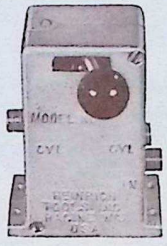


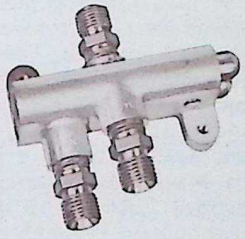
**No. 45-12CI** .....6 lb.
**FOOT TREADLE VALVE** $34.47

Foot-operated, four-way air valve, for instant, hand-free operation of Heinrich Air Vises or Clamps with double-acting air cylinders . . . (one or several units.) Treadle remains open or closed without constant foot pressure. Two 1/4" mounting holes.



**No. 45-18** .....3 lb.
**HAND VALVE** ..... $51.51

Hand-operated, four-way air valve, for quick operation of Heinrich Units with double-acting air cylinders. Valve remains open or closed without constant hand pressure. 1/4" NPS male fittings.
Four 3/16" mounting holes in base.

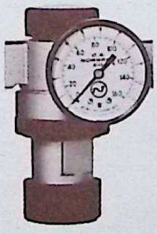


**No. 45** .....2 lb.
**AIR VALVE** ..... $16.76

Four-way air valve for actuating double-acting air cylinders. Hardened steel plunger button, spring return, for cam operation. 1/4" NPS male fittings. Two 10-32 tapped mounting holes.

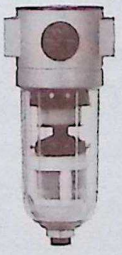
**No. 37**.....1 lb.
**QUICK EXHAUST VALVE** ..... $16.76

Speeds up action of air cylinders. For mounting at air inlet of cylinder to provide automatic, quick exhaust of air, resulting in rapid piston rod return travel. Hose coupling provided on inlet, 1/4" NPS. Outlet to cylinder tapped 1/4" NPT. Poppet type valve. Maximum operating pressure — 150 psi.



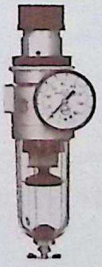
**No. R11-200-RGL** .....3 lb.
**AIR REGULATOR, WITH GAUGE** ..... $18.91

For reducing air line pressure to control holding power of Heinrich Air Units. Pressure range — 2 to 125 psig. Inlet and outlet — 1/4" NPT.



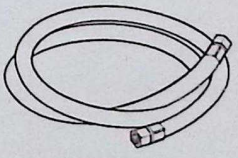
**No. F11-200-M3T** ...2 lb.
**AIR FILTER** ..... $17.08

Automatically removes corrosive moisture, abrasives and other solids from air lines. For pressures up to 150 psig. Manual drain. Inlet and outlet — 1/4" NPT.



**No. B11-221-M3L** .....3 lb.
**AIR FILTER/ REGULATOR** ..... $34.79

Combines filter and regulator into one compact unit. 2 to 125psig range. Inlet and outlet — 1/4" NPT. Automatic drain.



**No. 34-14** .....2 lb.
**AIR HOSE** ..... $6.53

For use with all Heinrich Air Units. 5-ft. length, 1/4" I.D., with 1/4" NPS female swivel fittings. 3 hoses required for double-acting units.

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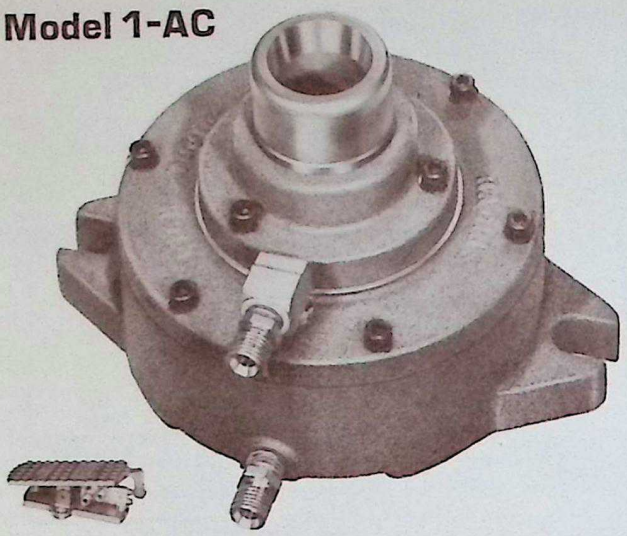
# AIR COLLET FIXTURE

Parts list with exploded view and instructions on page 47.

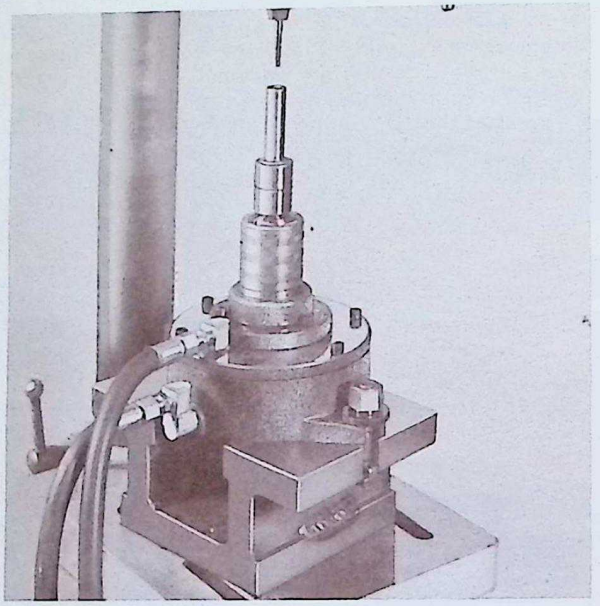
## Model 1-AC



Uses standard 5-C type collets up to 1-1/16" dia. to hold round, hexagonal and square workpieces. Can also be used with step chuck collets and expanding chucks for internal gripping. Double acting, piston type air cylinder develops holding power 18 times air line pressure. Maximum operating pressure 150 psi. Has 1-7/64" hole completely through unit for bar feeds or dropping finished parts. Two lugs provided for mounting. Knurled collet holder is hardened and precision ground. Base of fixture is relieved for chip removal and coolant flow. Operates with No. 45-12CI Four-Way Foot Treadle or No. 45-18 Four-Way Hand Valve and three No. 34-14 Air Hoses. Air Accessories on page 13. 5-C collets are not furnished, but they may be purchased from Hardinge Brothers, Inc., Horseheads, New York 14845, or Buck Tool Company, Kalamazoo, Michigan 49001. If operation requires a collet stop, the Hardinge Universal Collet Stop is recommended.

**PRICES and WEIGHTS:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| 1-AC (Complete with No. 45-12CI Four-Way Foot Treadle and three No. 34-14 Air Hoses) | 26 lb. | $231.26 |
| 1-AC-A (Fixture Only) | 18 lb. | 178.74 |



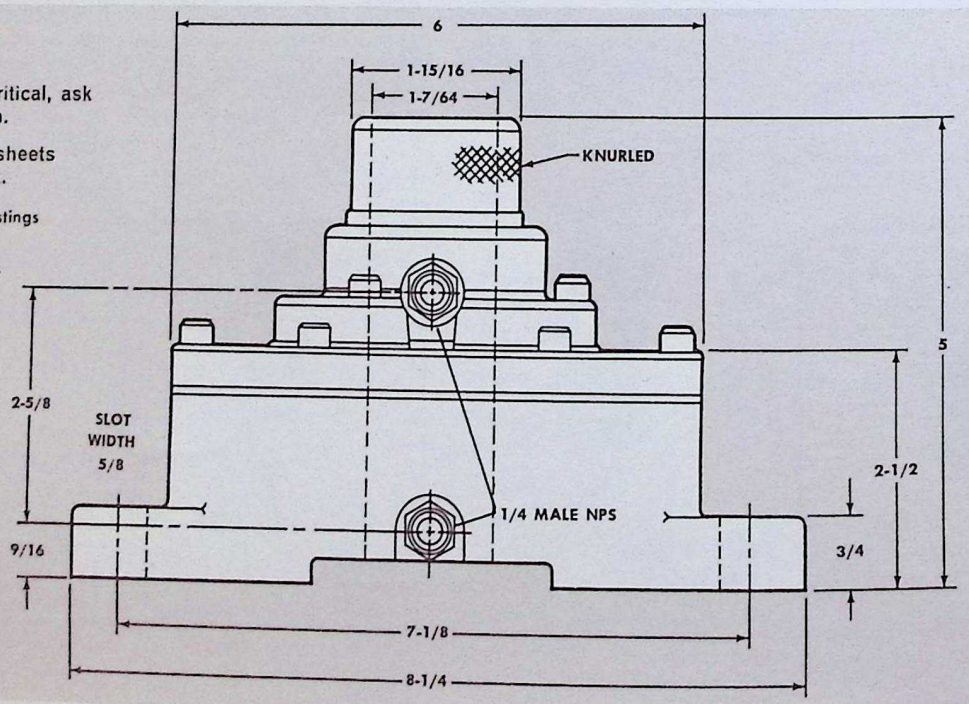
1-AC AIR COLLET FIXTURE, used in tapping operation . . . mounted on a sub-base to permit long workpiece to pass through fixture.

**DIMENSIONS:**

If dimensions are critical, ask for their certification.

Full-scale template sheets available on request.

Stock is provided in castings for the addition of keyway slots if desired.



# PRODUCTION BENCH VISE

Parts list with exploded view and instructions on page 36.

**. . . air operated**

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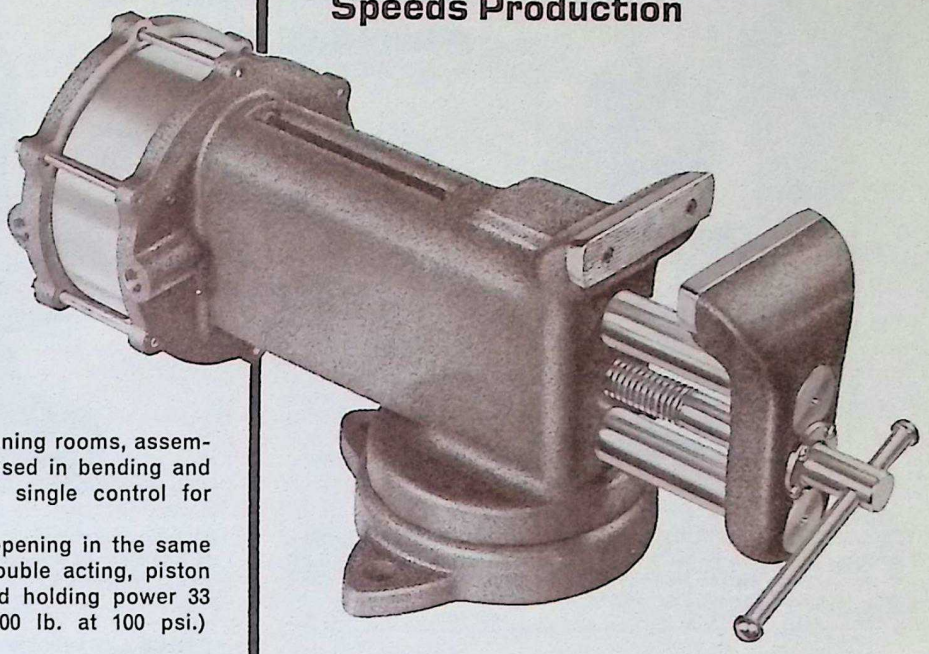
## Model 14

**Speeds Production**



SPEEDS PRODUCTION in foundry cleaning rooms, assembly lines, welding operations. May be used in bending and straightening jobs. Use in pairs with single control for holding long workpieces.

The vise is adjusted to the desired opening in the same manner as an ordinary bench vise. Double acting, piston type, air cylinder provides 1" travel and holding power 33 times air line pressure. (Example: 3300 lb. at 100 psi.) Maximum operating pressure 150 psi.

4-1/2" Jaw Width opens to 6 inches. A locking lever controls rotation of vise on swivel base. Hardened and ground bars maintain perfect jaw alignment. Serrated, hardened jaw faces are replaceable.

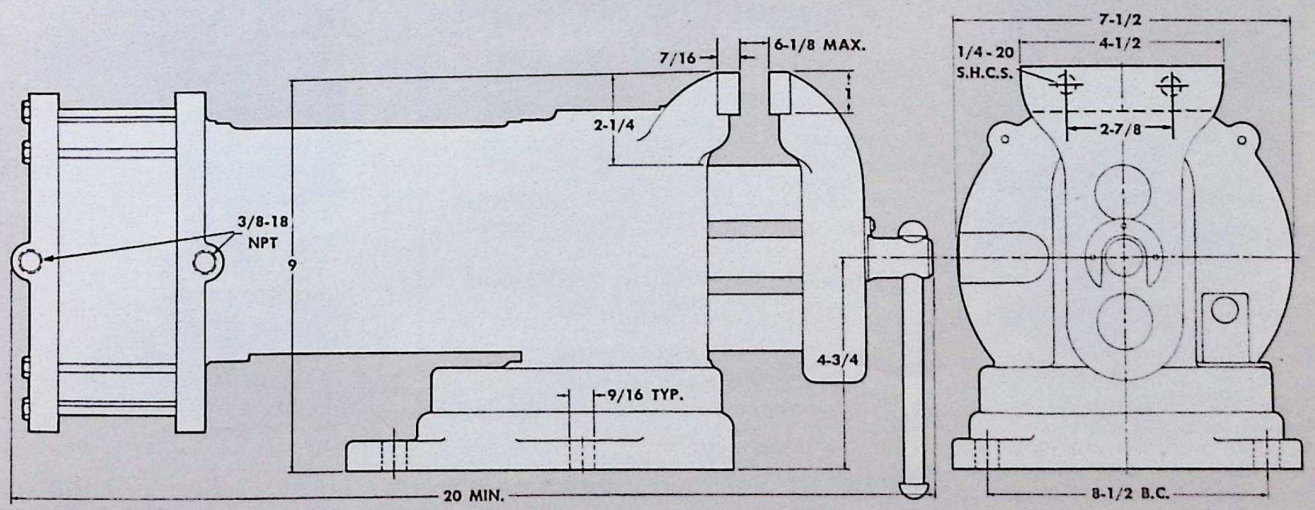
Vise operates with No. 45-12Cl Four-Way Foot Treadle Valve or No. 45-18 Three-Way Hand Valve and three No. 34-14 Air Hoses. Air accessories are described on page 13.

Foot treadle leaves operator's hands free; vise jaws remain open or closed without constant foot pressure.

**PRICES and WEIGHTS:**

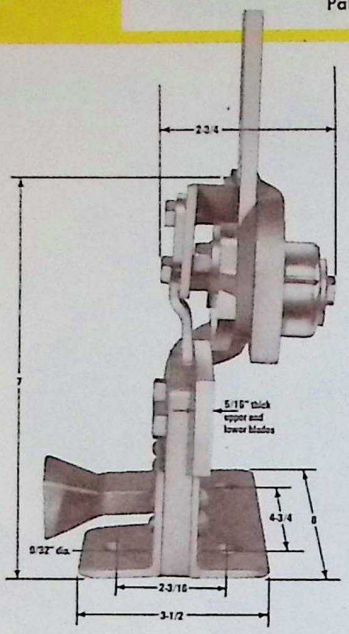
| Model | Shipping Weight | Net Price |
|---|---|---|
| 14 (Complete with No. 45-12Cl Four-Way Foot Treadle and three No. 34-14 Air Hoses) | 110 lb. | $538.53 |
| 14-A (Vise only) | 102 lb. | 486.01 |

**DIMENSIONS:**




If dimensions are critical, ask for their certification.
Full-scale template sheets available on request.

Parts list with exploded view and instructions on page 48.

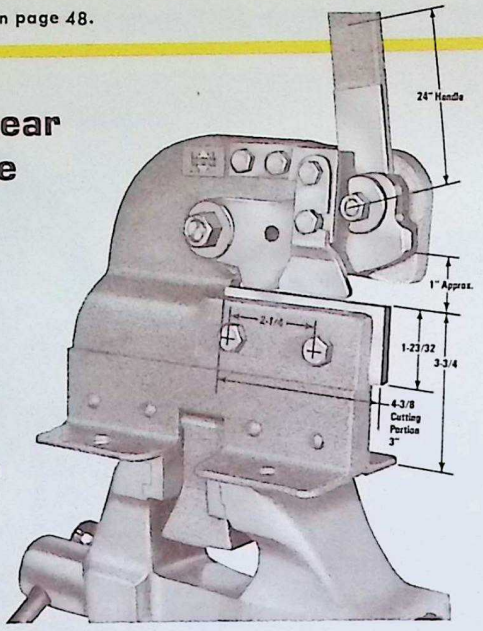



## No. 1 Portable Shear mounts on any vise

**SHEARING CAPACITY**
**1/8" Mild Steel**

**ROD CUTTING CAPACITY**
**5/16" Round**

All steel construction. Compounded leverage provides easy cutting action.

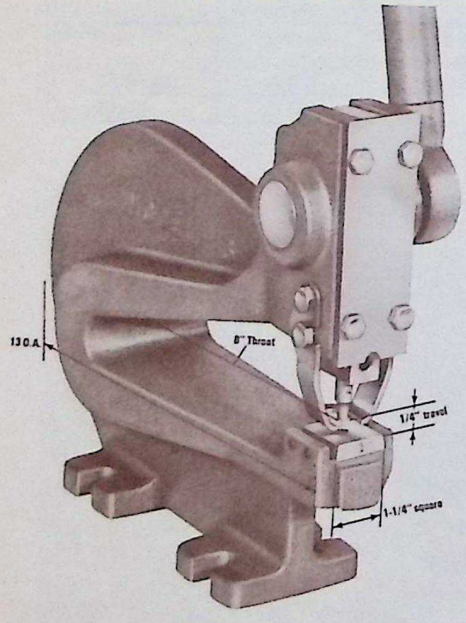



The latch is hinged to fold out of the way for bench mounting. Frame constructed to permit shearing of wide sheets, straight cuts or outside curves. Tool steel blades interchangeable and easily removed for sharpening.

Outstanding design feature is a hinged latch, which, when clamped lengthwise or crosswise in a vise, provides a firm mounting. Easily portable to the job.

**PRICE and WEIGHT:**

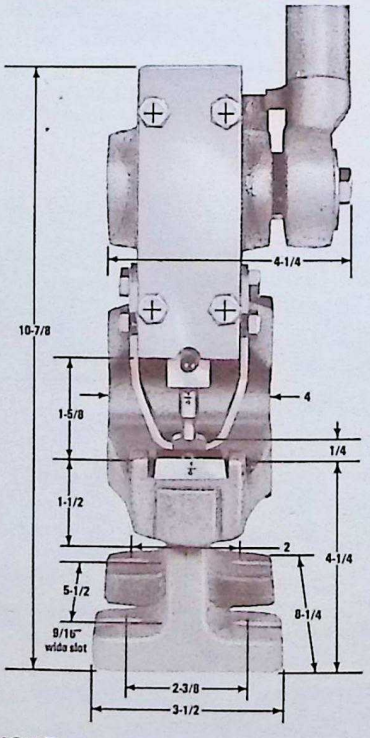
| Model | Shipping Weight | Net Price |
|---|---|---|
| 1 | 18 lb. | $129.12 |




## No. 6 Deep Throat BENCH PUNCH

**PUNCHING CAPACITY**
**1/2" hole through**
**1/8" mild steel**

Full eight-inch throat depth allows maximum utility for punching wide stock . . . punches to the center of a 16 inch circle. Double crank handle drive provides easy operation. Body is ductile iron and wearing parts are hardened and ground.




**STANDARD ROUND PUNCH AND DIE SIZES:**
1/16", 3/32", 5/64", 7/64", 1/8", 9/64", 5/32", 11/64", 3/16", 13/64", 7/32", 15/64", 1/4", 17/64", 9/32", 19/64", 5/16", 21/64", 11/32", 23/64", 3/8", 25/64", 13/32", 27/64", 7/16", 29/64", 15/32", 31/64", 1/2".

**STANDARD SQUARE PUNCH AND DIE SETS**
1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2".

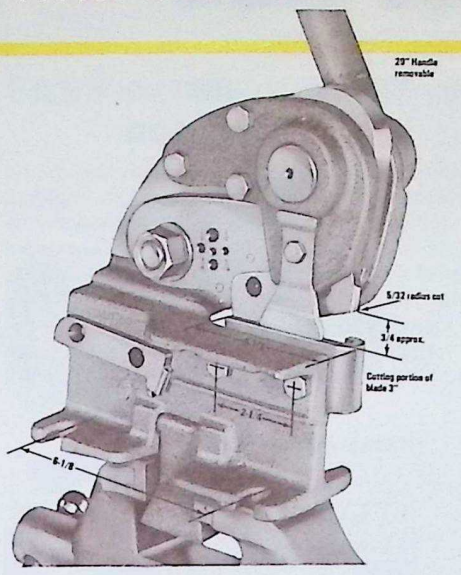
No. H-71 Punch — $3.51
No. H-72 Die — 4.24
} $7.75

No. H-71 SQ Punch — 16.76
No. H-72 SQ Die — 18.36
} $35.12

**PRICE and WEIGHT:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| 6 | 44 lb. | $213.99 |

(Price includes 1/4" Round Punch and Die Set unless other size is specified.)




## Model No. 4 Handnib

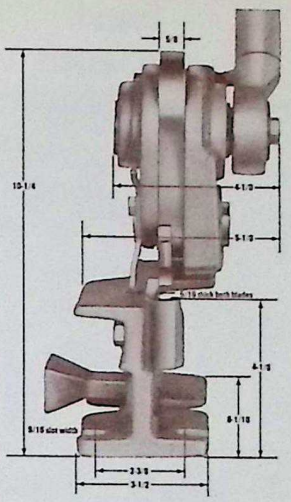
**A COMBINATION NIBBLER, SHEAR AND ROD CUTTER — FOR VISE OR BENCH MOUNTING.**

**SHEARING AND NIBBLING CAPACITY**
**3/16" Mild Steel**

(Nibbles irregular shapes, inside or outside. Inside nibbling depth of cut 4" from any outside edge.)

**ROD CUTTING CAPACITY, ROUNDS**
**3/16", 1/4", 5/16", 3/8"**

The vise-mounting latch is hinged to fold out of the way for bench mounting. Frame construction allows shearing of wide sheets, straight cuts or outside curves.

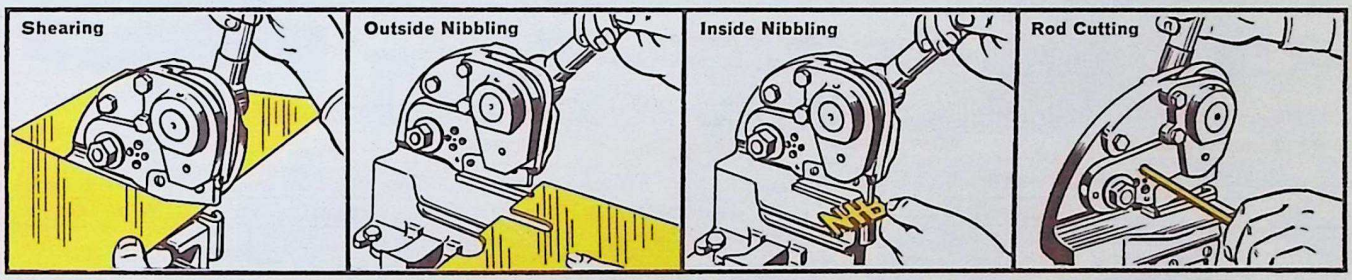


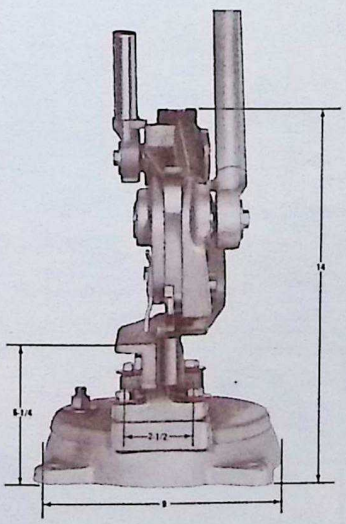

Double crank construction makes operation easy. Body is cast steel; tool steel blades and rod cutting dies are interchangeable and may be sharpened. All wearing parts are hardened and ground.

This portable tool features a latch which clamps lengthwise or crosswise in any vise, thereby making it easy to take the Handnib to the job. Useful tool for making templates, trial blanks. Indispensable for hobby shops, experimental departments . . . safe for school shops.

**PRICES and WEIGHTS:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| 4-A (Complete for outside nibbling, inside nibbling, shearing and rod cutting) | 29 lb. | $267.67 |
| 4-B (Complete for shearing and rod cutting — no nibbling) | 29 lb. | 228.87 |




## Model No. 5-A Handnib

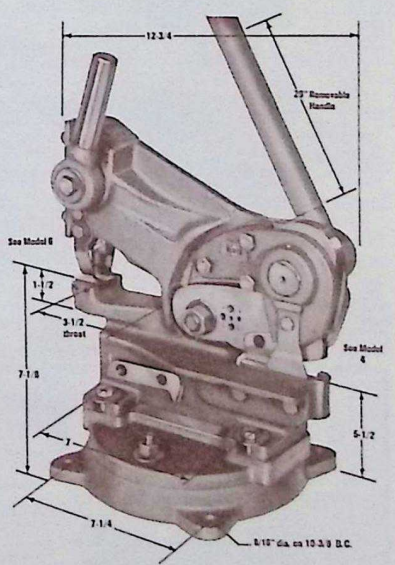
**A NIBBLER, SHEAR, ROD CUTTER AND PUNCH — ON A SWIVEL BASE**

(Combines features of
Model 4-A HANDNIB and Model 6 Punch)

**SHEARING AND NIBBLING (inside and outside) CAPACITY 3/16" mild steel**

**ROD CUTTING CAPACITY, ROUNDS**
**3/16", 1/4", 5/16", 3/8"**

**PUNCHING CAPACITY**
**(Depth of throat — 3-1/2")**
**1/2" hole through 1/8" mild steel**




Cast steel frame swivels easily and locks in place for desired operation. Double crank construction makes operation easy. Tool steel blades and rod cutting dies are interchangeable and may be sharpened. All wearing parts are hardened and ground. This four-in-one tool is indispensable for making templates, trial blanks, in machine shops, hobby shops, experimental departments . . . safe for school shops.

**PRICE and WEIGHT:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| 5-A | 90 lb. | $564.36 |

(Price includes 1/4" Round Punch and Die Set unless other size is specified.)

EXTRA PUNCHES AND DIES: (Same as Model 6 on page 16.)

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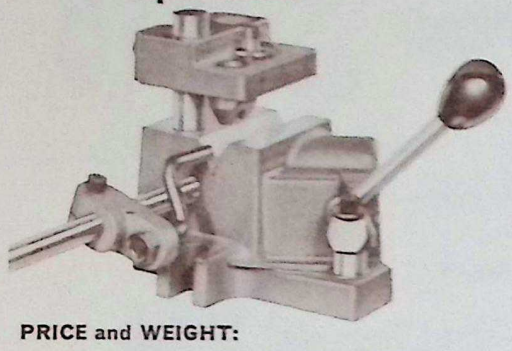
# ADJUSTABLE CROSS-HOLE DRILL JIGS

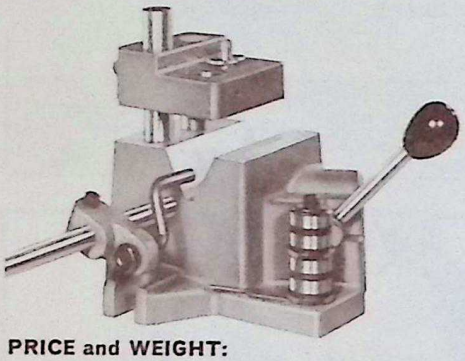
Parts list with exploded view and instructions on page 38.

## hand operated



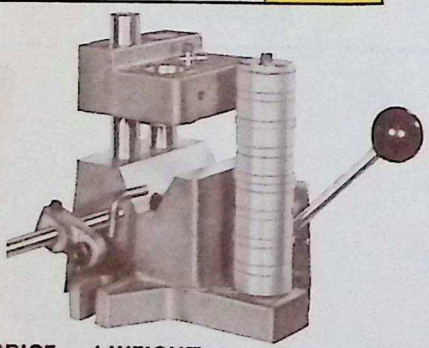
**PRICE and WEIGHT:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| 305 | 13 lb. | $125.28 |



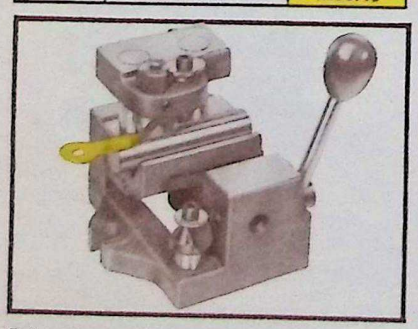
**PRICE and WEIGHT:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| 605 | 20 lb. | $154.01 |



**PRICE and WEIGHT:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| 905 | 40 lb. | $268.40 |



Set gage provides proper clearance for inserting and removing the workpiece.

**CAPACITY — 1/8" to 3/4"**

| I.D. of Liners Furnished | Holds Standard ASA Bushings* |
|---|---|
| 5/16" | .0135 to .1935 |
| 1/2" | .1405 to .3437 |

(V-Taper liners . . . for small diameter stock . . . groove for chip clearance)

**CAPACITY — 3/4" to 1-1/2"**

| I.D. of Liners Furnished | Holds Standard ASA Bushings* |
|---|---|
| 5/16" | .0135 to .1935 |
| 1/2" | .1405 to .3437 |
| 3/4" | .2812 to .5625 |

Without a liner, a 1" O.D. Drill Bushing can be used. .4687 to .7812

(Liners straight . . . for 3/4" diameter stock and larger.)

**CAPACITY — 1-1/2" to 2-1/2"**

| I.D. of Liners Furnished | Holds Standard ASA Bushings* |
|---|---|
| 5/16" | .0135 to .1935 |
| 1/2" | .1405 to .3437 |
| 3/4" | .2812 to .5625 |
| 1" | .4687 to .7812 |
| 1 3/8" | .7187 to 1.0625 |

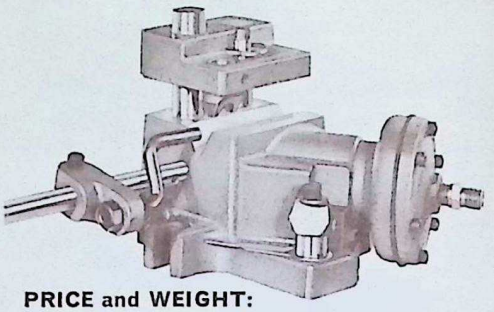
Without a liner, a 1 3/4" O.D. Drill Bushing can be used. .9687 to 1.4062

* By use of liner, smaller bushings can be used. WE DO NOT FURNISH BUSHINGS, WHICH MAY BE PURCHASED FROM A LOCAL BUSHING SUPPLIER. Specify: Standard Slip Renewable Bushings, 1" long, and give size of hole to be drilled or reamed.

(Bushings for 905 and AR-905 — 1-1/2" long).

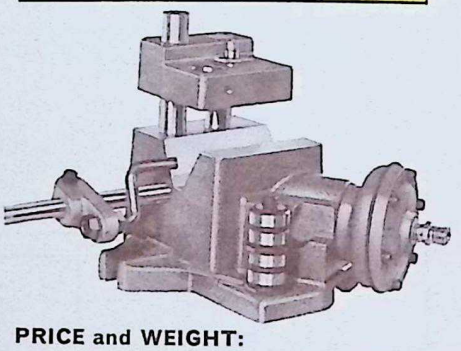
SEE PAGE 11 FOR AIR ACCESSORIES.

## air operated



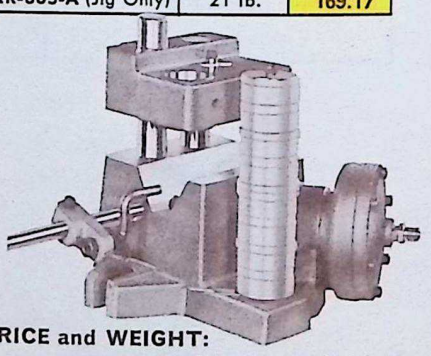
**PRICE and WEIGHT:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| AR-305* (Complete) | 20 lb. | $172.50 |
| AR-305-A (Jig Only) | 14 lb. | 139.65 |



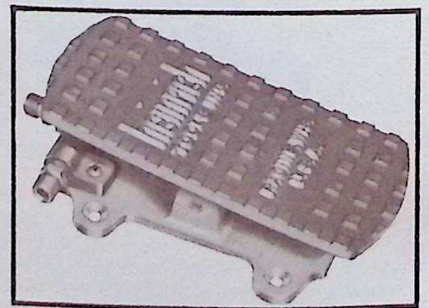
**PRICE and WEIGHT:**

| Model | Shipping Weight | Net Price |
|---|---|---|
| AR-605* (Complete) | 27 lb. | $202.04 |
| AR-605-A (Jig Only) | 21 lb. | 169.17 |



**PRICE and WEIGHT:**

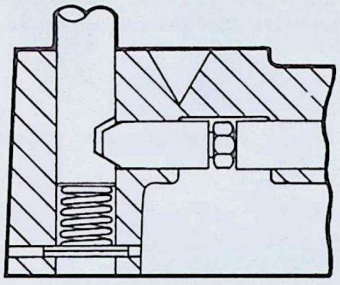
| Model | Shipping Weight | Net Price |
|---|---|---|
| AR-905* (Complete) | 50 lb. | $320.12 |
| AR-905-A (Jig Only) | 44 lb. | 287.25 |



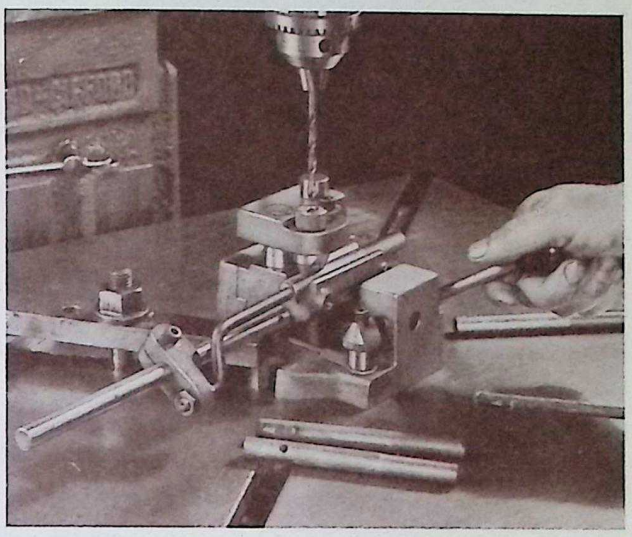
* Furnished with No. 34-12CI Foot Treadle and two No. 34-14 Air Hoses.

# EASY set-up . . . FAST action . . . SPEED production

Designed for precision cross-hole drilling of round or hexagon stock. Clamping plate quickly adjusts to the size of the workpiece. An easy press on the locking lever of the hand-operated units, or actuating the air valve of the air-operated jigs, pulls the clamping plate down against the workpiece, with a travel of 3/64". Flick the lever to vertical position, or release the foot or hand valve, and the part can be removed. An adjustable stop, with 9" long rod for locating work longitudinally, is furnished for use on either side of the jig.



Drills are guided by A.S.A. slip bushings fitted into adapter liners in the clamping plate. Bushings are held in position by an adjustable lock screw. Plate is held in alignment and positioned by hardened and ground guide pins and locking plunger. The adapter liner in the clamping plate is accurately centered, within a tolerance of ±.001", above the hardened and ground 60° V-Block.

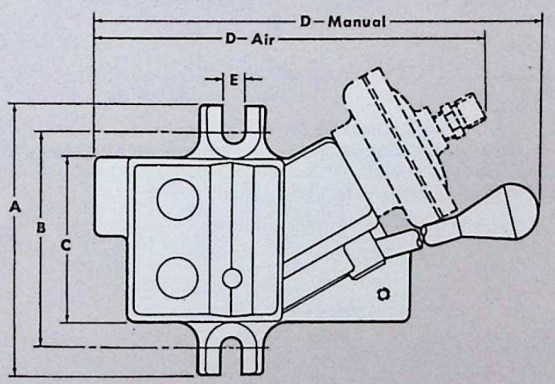


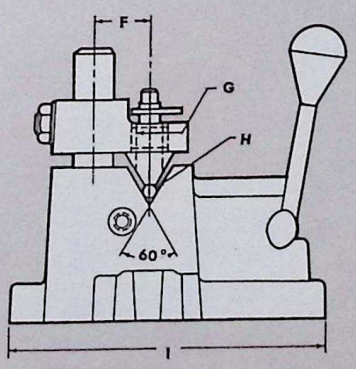
**Air operated** units feature single acting air cylinder, diaphragm type, spring return. Safely used on air line pressures up to 125 lb. — 80 to 100 psi. recommended for operation. Operate with No. 34-12CI Three-Way Foot Treadle or No. No. 34-18 Three-Way Hand Valve and two No. 34-14 Air Hoses.

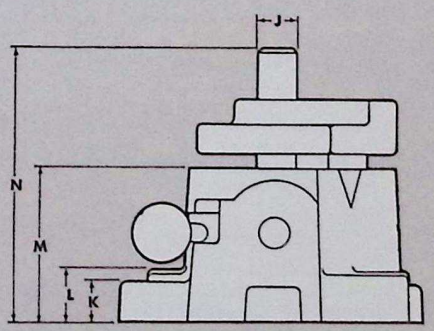
**DIMENSIONS:**

| | 305 AR-305 | 605 AR-605 | 905 AR-905 |
|---|---|---|---|
| A | 5 1/8 | 6 3/4 | 8 1/2 |
| B | 4 1/8 | 6 | 7 |
| C | 3 1/8 | 3 3/4 | 5 |
| D-Air | 7 1/2 | 8 7/8 | 10 1/2 |
| D-Manual | 9 1/4 | 10 1/2 | 13 1/4 |
| E | 1/2 | 1/2 | 5/8 |
| F | 1.062 | 1.500 | 1.875 |
| G | Max. 1/2 Min. 5/16 | Max. 3/4 Min. 5/16 | Max. 1 3/8 Min. 5/16 |
| H | 3/4 1/8 | 1 1/2 3/4 | 2 1/2 1 1/2 |
| I | 6 1/16 | 7 1/16 | 9 1/8 |
| J | .742 | .742 | .989 |
| K | 1 1/16 | 5/8 | 1 1/16 |
| L | 1 5/16 | 1 3/16 | 1 1/8 |
| M | 2 15/16 | 3 5/8 | 4 1/8 |
| N | 5 1/4 | 6 3/4 | 8 5/8 |

If dimensions are critical, ask for their certification. Full-scale template sheets available on request.



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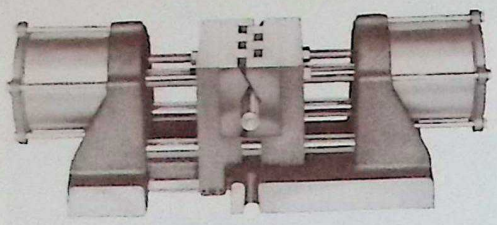
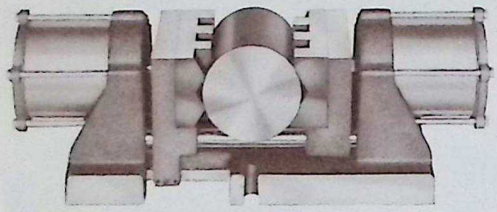
# SELF-CENTERING VISES

Parts list with exploded view and instructions on page 40



Heinrich Model DA-6600-SC Self-Centering Air Vise, with No. 6619 horizontal V-Jaws, automatically centers round stock, ranging in size from 1" to 5".

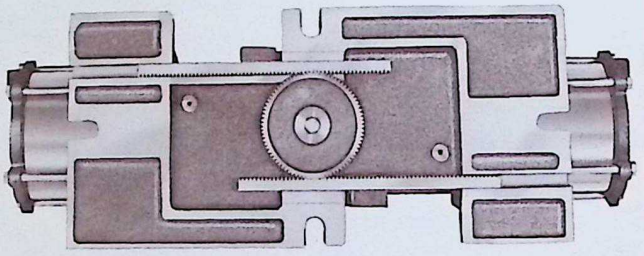


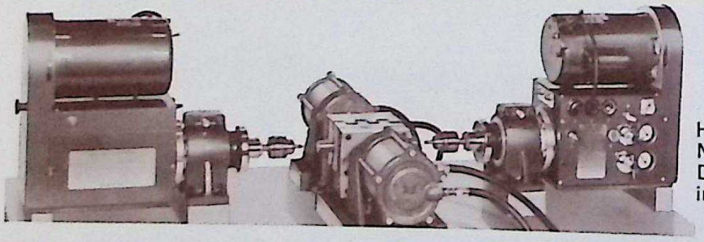
## Automatically centers parts varying in size

## 1/4" to 9" round capacity . . .

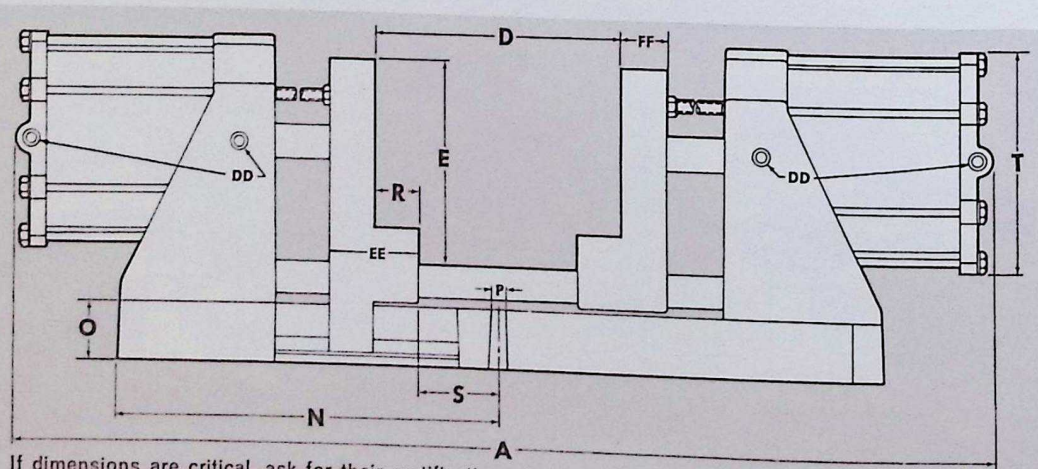
Heinrich Self-Centering Vises, with piston type air cylinders, will accommodate dimensional variation in workpieces and odd-shaped parts, when the machining operation requires the location of an exact relative center or other predetermined point. Offered as an attachment for each vise is a set of interlocking, hardened and ground, horizontal V-jaws. The vises, when fitted with the standard V-jaws, will, with one setup, automatically center round stock varying in size. This considerably reduces set-up time in center drilling, trepanning, boring, and a wide range of machining operations. Vises may also be fitted with special false jaws to correctly position irregularly shaped parts.

Heinrich Self-Centering Air Vises automatically center in this manner: Each of two opposing jaws is actuated directly by a double-acting piston type air cylinder on both ends of the vise. Jaws are mounted on hardened and ground parallel bars to maintain perfect jaw alignment. The jaws are connected by a gear and rack assembly concealed in the vise base so that they move together equally on both sides of center, within an accuracy of ±.001". This mechanism is fully protected from dirt, chips and coolant. No pressure is transmitted through the centering device, which serves only to guarantee uniformity of jaw travel. Double acting air cylinders provide full travel of the jaw opening, and return of the jaws under air pressure. The amount of jaw return may be regulated by equally adjusting the length of the threaded stop rods attached to the back of each jaw. The rods stop against the vise body casting when the jaws are in the open position.

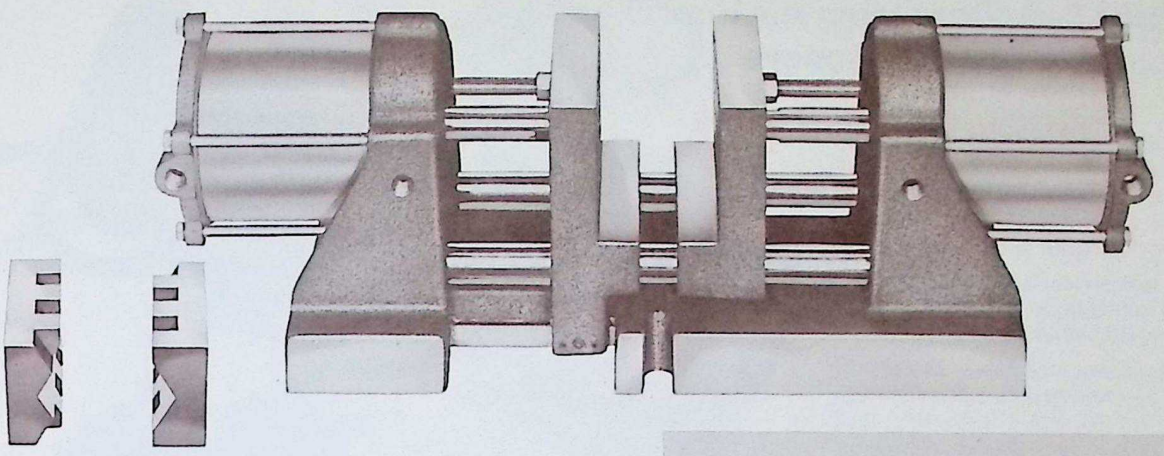




Heinrich Model DA-6600-SC Self-Centering Air Vises, fitted with No. 6619 Horizontal V-Jaws, in center-drilling operation with DUMORE Drill Heads. Automatically centers round stock ranging in size from 1" to 5", with one setup.




If dimensions are critical, ask for their certification. Full-scale template sheets available on request.



## PRICES and WEIGHTS:

| Model | Shipping Weight | Power Factor | Net Price* |
|---|---|---|---|
| DA-2200-SC | 44 | 15X | $376.63 |
| DA-6600-SC | 155 | 19X | 869.76 |
| DA-8800-SC | 390 | 33X | 1296.65 |

**Model DA-2200-SC** operates with No. 45-12CI Four-Way Foot Treadle or No. 45-18 Four-Way Hand Valve. Seven No. 34-14 air hoses and one manifold are required to set up for operation as described in operation instructions on pages 40 and 41.

**No. 45-52 Four-Way Foot Control Package** for Model DA-2200-SC, consisting of (1) No. 45-12CI Foot Treadle, (7) Air Hoses, and (1) Manifold — Price — $99.02

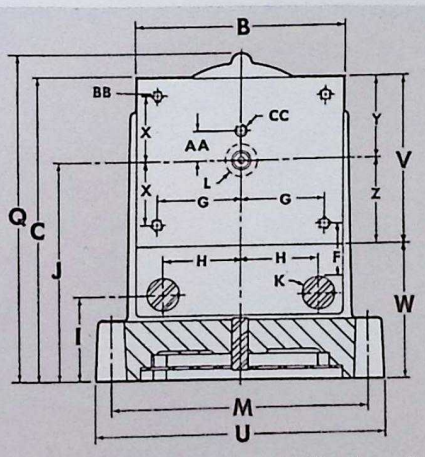
**No. 45-58 Four-Way Hand Control Package** for Model DA-2200-SC, consisting of (1) No. 45-18 Hand Valve, (7) Air Hoses, and (1) Manifold — Price —$116.06

**68-52 Four-Way Foot Control Package,** for DA-6600-SC and DA-8800-SC, consisting of (1) Nopak #FRNA-3 ⅜" NPT 4-Way Foot Valve, (7) ⅜" I.D. Air Hoses, and (1) Manifold — Price —$176.64

**68-58 Four-Way Hand Control Package,** for DA-6600-SC and DA-8800-SC, consisting of (1) Nopak #H4A-3 ⅜" NPT 4-Way Hand Valve, (7) ⅜" I.D. Air Hoses, and (1) Manifold — Price —$133.47

## INTERLOCKING HORIZONTAL V-JAWS:

| Model | Capacity (Round) Min. | Capacity (Round) Max. | Shipping Weight | Net Price |
|---|---|---|---|---|
| 2219 (for DA-2200-SC) | ¼" | 1¾" | 6 lb. | $172.36 |
| 6619 (for DA-6600-SC) | 1" | 5" | 18 lb. | 185.13 |
| 8819 (for DA-8800-SC) | 2" | 9" | 53 lb. | 323.96 |




## DIMENSIONS:

| | DA-2200-SC | DA-6600-SC | DA-8800-SC |
|---|---|---|---|
| A | 20½ | 26½ | 38¼ |
| B | 4 | 6 | 8 |
| C | 4 7/16 | 7 19/32 | 11 23/32 |
| D | 3¼ Max. 1 Min. | 8¾ Max. 2¾ Min. | 14 Max. 3½ Min. |
| E | 2 | 4 17/32 | 7 25/32 |
| F | 1 1/16 | Loc. to C/L | Loc. to C/L |
| G | 1¼ | 2½ | 3¼ |
| H | 1 5/64 | 2⅛ | 3 |
| I | 2⅛ | 2 5/16 | 3 5/16 |
| J | 3¼ | 5⅜ | 8½ |
| K | .617 | .989 | 1.240 |
| L | .742 | .989 | 1.240 |
| M | No Mounting Slots | 7½ | 9½ |
| N | 4 31/32 to C/L | 10 | 15 |
| O | 1 | 1¾ | 2¼ |
| P | No Mounting Slots | 21/32 | 21/32 |
| Q | 6⅛ | 8⅞ | 12 5/8 |
| R | No Step | 1⅛ | 1¾ |
| S | 1⅛ Stroke | 3 Stroke | 5¼ Stroke |
| T | 5¾ | 6¼ | 8¼ |
| U | 6¼ | 9 | 11 |
| V | No Step | 3 31/32 | 6 15/32 |
| W | No Step | 3⅝ | 5¼ |
| X | 2 Holes Only | 1½ | 2½ |
| Y | 1⅛ | 1 31/32 | 3 7/32 |
| Z | No Step | 2 | 3¼ |
| AA | ⅝ | 1⅛ | 1 3/16 |
| BB | 11/32 | 11/32 | 13/32 |
| CC | ⅜-16 | ½-13 | ½-13 |
| DD | ¼-18 NPT | ⅜-18 NPT | ⅜-18 NPT |
| EE | 1 5/16 | 2⅜ | 3½ |
| FF | 13/16 | 1¼ | 1¾ |

Stock is provided in base castings for the addition of keyway slots if desired. Two vises may then be keyed together on a work table to hold and center long workpieces on both ends simultaneously.

If dimensions are critical, ask for their certification. Full-scale template sheets available on request.

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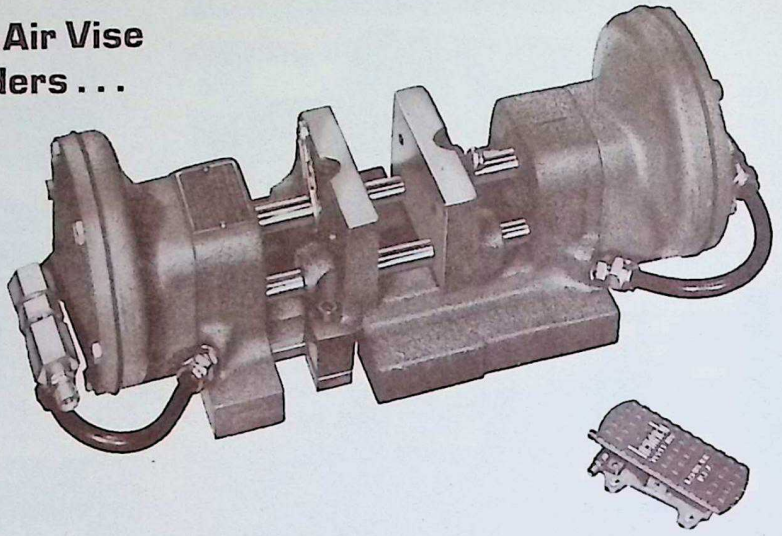
# SELF-CENTERING VISE

Parts list with exploded view and instructions on page 42.

## Model 2200 Self-Centering Air Vise with Single-acting Air Cylinders . . .



Jaws are actuated by diaphragm-type, spring return air cylinders. Holding power on the work is approximately 15 times air line pressure. (Example: 1,500 lbs. at 100 psi.) Maximum operating pressure 150 psi.

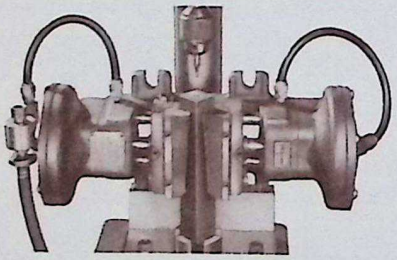
Movable jaws are independently adjustable. Quickly set in position by ratchet-operated, triple lead thread adjusting screw.

4" wide jaws infinitely adjustable from 1" to 3-1/4" opening. Maximum travel after setting — 3/8", each jaw, total of 3/4" opening. Our quick Exhast Valve No. 37 is furnished with vise for rapid jaw return travel. Vise operates with No. 34-12CI Three-Way Foot Treadle Valve or No. 34-18 Three-Way Hand Valve and two No. 34-14 Air Hoses. See page 11 for air accessories.

Foot treadle leaves operator's hands free; vise jaws remain open or closed without constant foot pressure.

**PRICES and WEIGHTS:**

| | Model | Shipping Weight | Net Price |
|---|---|---|---|
| 2200 | (Complete with No. 34-12CI Foot Treadle Valve and two No. 34-14 Air Hoses.) | 49 lbs. | $341.67 |
| 2200-A | Vise only | 43 lbs. | 308.80 |



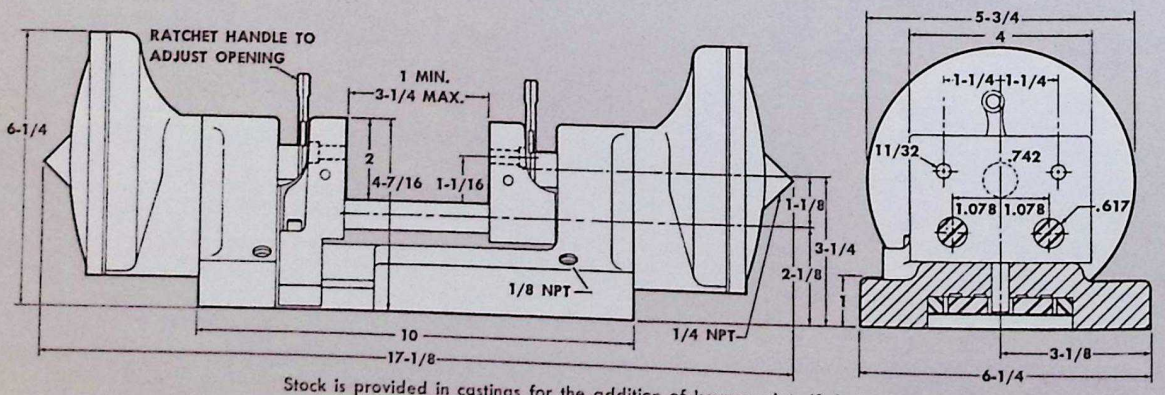
Used as a jig and fixture base, Heinrich Self-Centering Vises cut designing and tooling time. Simply attach false jaws to the jaw castings so that the vise will correctly position any shape of part.

Heinrich Model 2200 Self-Centering Vise adapted to hold parts 3/4" to 1-1/4" square x 7" long-rough sawed from steel plate — in a center drilling operation.

### AUTOMATICALLY CENTER PARTS VARYING IN SIZE WITHIN A TOLERANCE OF ±.001"

Heinrich Self-Centering Vises are production tools designed for holding parts varying in size or shape . . . when the work performed requires the location of a center or other pre-determined point. This point is found automatically. Each of the two opposing jaws is actuated directly by cylinders on both ends of the vise. Jaws are mounted on two hardened and ground parallel bars to maintain perfect jaw alignment. Stock is provided in base castings for addition of keyway slots if desired.

**DIMENSIONS:**




Stock is provided in castings for the addition of keyway slots if desired

If dimensions are critical, ask for their certification. Full-scale template sheets available on request.

# SELF-CENTERING VISE

Parts list with exploded view and instructions on page 44.

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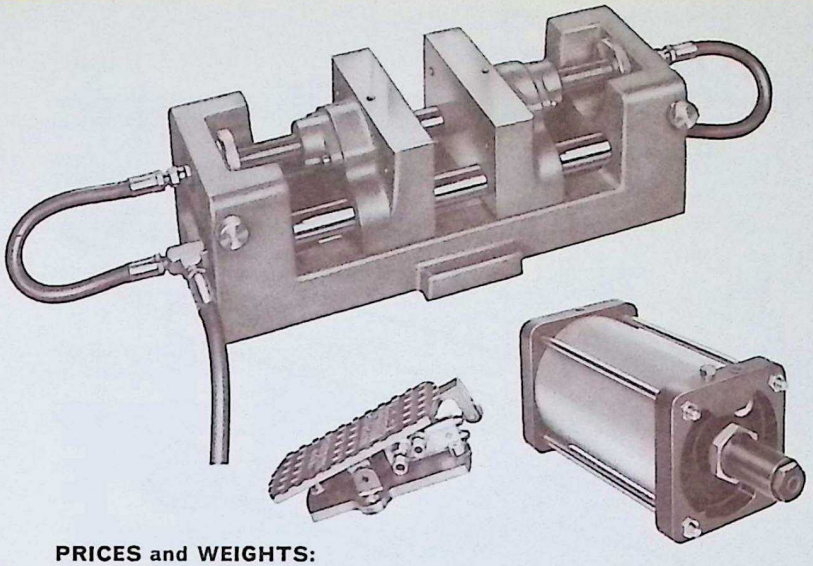


## Model 77 Air-Hydraulic Self-Centering Vise . . .

Jaws are actuated as follows: Our No. DA-18 Air Hydraulic Booster increases air pressure into greater hydraulic pressure which is transmitted to the jaws through a flexible hose. Hydraulic cylinders in the jaws develop holding power on the work of 40 times air line pressure. (Example: 4,000 lbs. at 100 psi.) Maximum operating pressure 150 psi.

Vise jaws automatically adjust equally in relation to center . . . by knurled adjusting nuts, locked by hand screws at both ends of vise.

7" wide jaws infinitely adjustable to 7-3/4" opening. Maximum travel — 11/16", each jaw, total of 1-3/8".

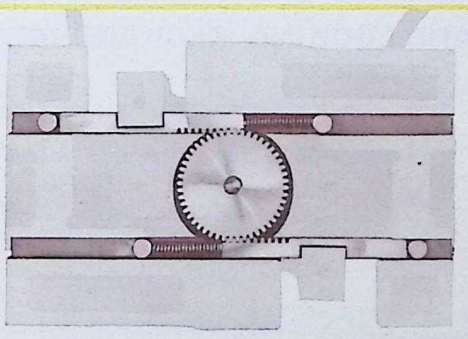
Quick Exhaust Valve No. 36 connected to No. DA-18 Booster for rapid jaw return travel.

Vise operates with No. 45-12 CI Four Way Foot Treadle Valve or No. 45-18 Four Way Hand Valve and three No. 34-14 Air Hoses. See page 13 for accessories.

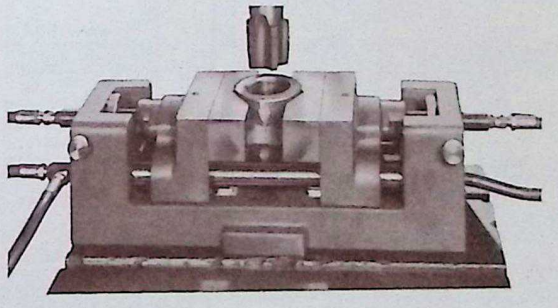
Foot treadle leaves operator's hands free; vise jaws remain open or closed without constant foot pressure.

**PRICES and WEIGHTS:**

| | Model | Shipping Weight | Net Price |
|---|---|---|---|
| 77 | (Complete with No. DA-18 Booster, No. 45-12CI Foot Treadle and three No. 34-14 Air Hoses) | 206 lb. | $1448.62 |
| 77-A | (Vise only, with No. DA-18 Booster attached — without foot treadle or hoses) | 183 lb. | 1,396.09 |

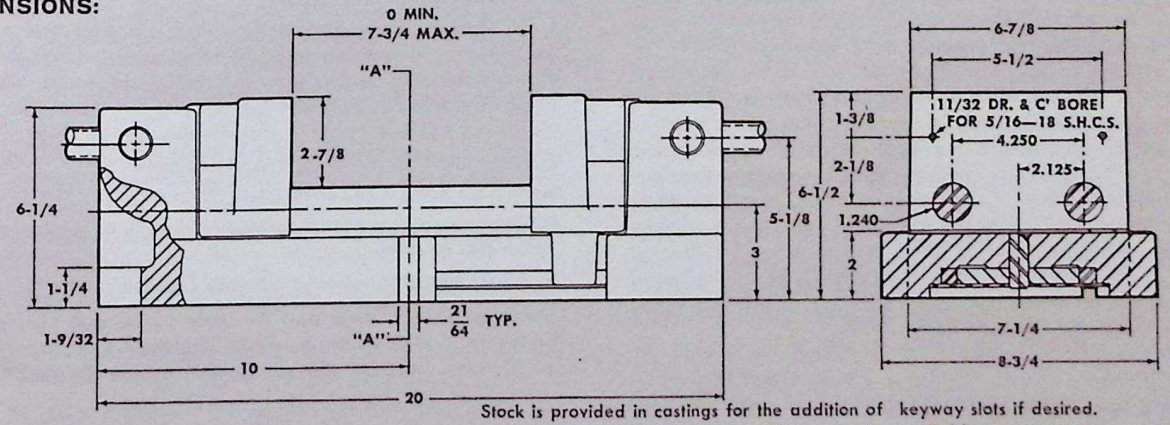


The movement of the jaws is synchronized within a tolerance of ±.001" by a gear and rack concealed in the base of the unit, fully protected from dirt, chips and coolant. No pressure is transmitted through the centering mechanism, which serves only to guarantee uniformity of jaw travel.



Heinrich Model 77 Self-Centering Vise fitted with false jaws to hold a cast iron elbow — to drill and tap a 2" hole.

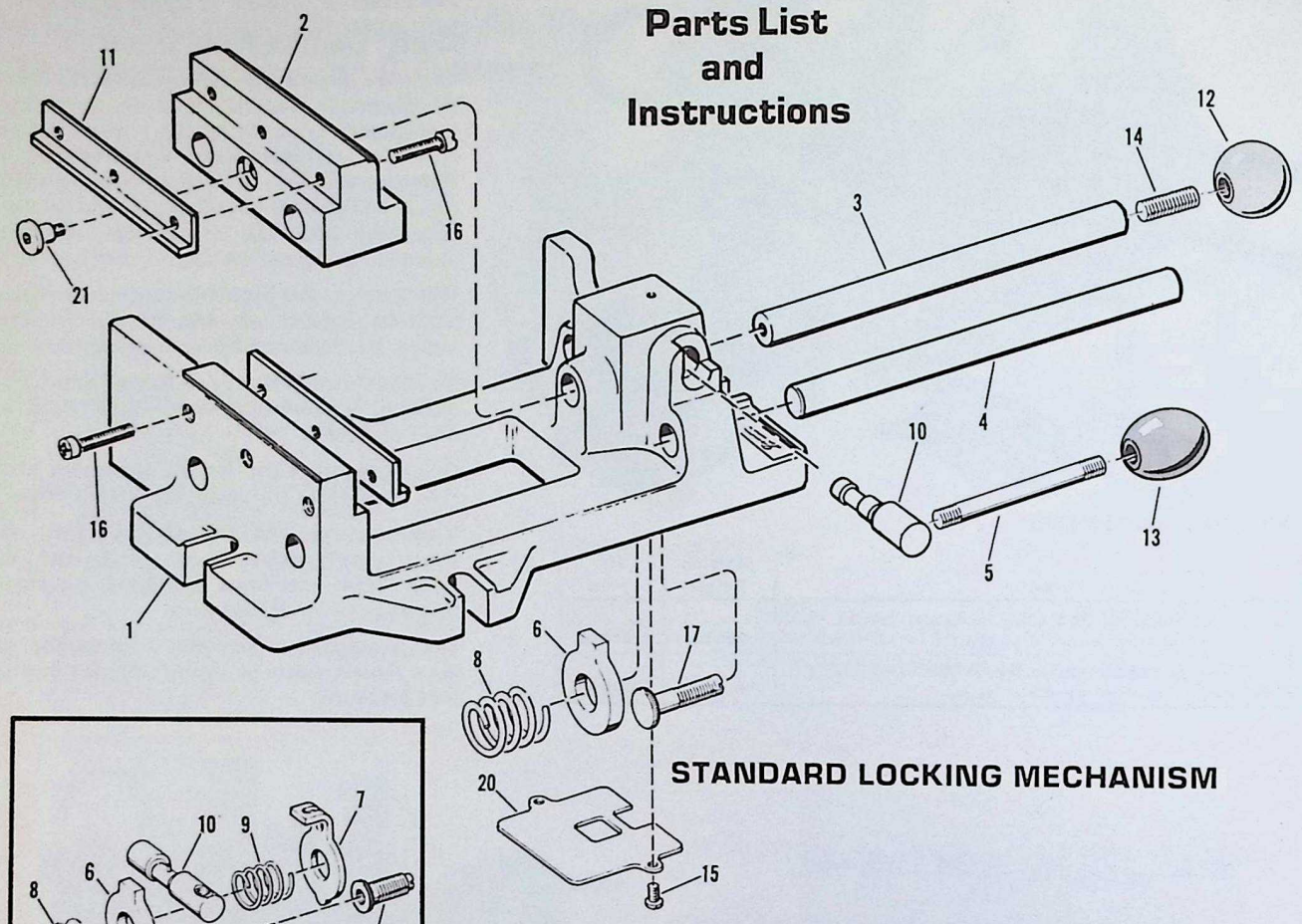
**DIMENSIONS:**



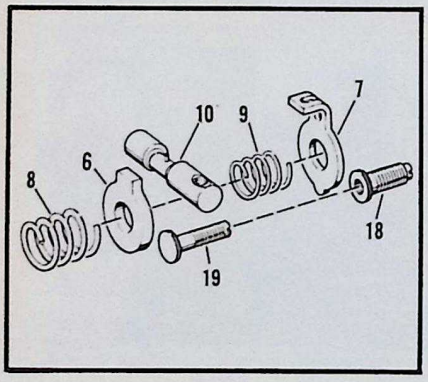

Stock is provided in castings for the addition of keyway slots if desired.

If dimensions are critical, ask for their certification. Full-scale template sheets available on request.

## Parts List and Instructions




STANDARD LOCKING MECHANISM




PA LOCKING MECHANISM

**OPERATION:**

Grip-Master units are adjusted for proper holding pressure at the time of assembly. Increased pressure can be obtained by a slight-counter-clockwise turn of the adjusting screw (after first loosening the cover plate). Decrease pressure by a clockwise turn of the adjusting screw. The amount of turn necessary can be determined by the results obtained. The maximum pressure setting is not necessary for adequate holding power. If it is difficult to depress the locking lever, the setting is on the heavy side. When just normal hand pressure is required to lower the lever to horizontal position, this is the proper setting of the adjusting screw. It is best when re-setting the locking mechanism to adjust to absolute maximum, then reduce pressure down to about middle range for ease of operation. Turning too far in either direction will cause the center bar to lock. For maximum machining accuracy, clamp vise to the work table using the two side lugs.

**MAINTENANCE:**

The locking mechanism of Grip-Master units must be oiled occasionally in the oil hole provided therefor. Keep bars and locking mechanism free from dirt and chips.

If a Grip-Master unit becomes inoperable, disassemble the locking mechanism in this manner:

**1.** To remove center bar (3) of a vise, place handle in locked position and remove the shoulder screw which attaches it to the movable jaw. (On models prior to 1958, the center bar was press fit into the movable jaw; bar can be removed by inserting a 1/4" pin in the knock-out hole in the movable jaw casting.)

**2.** Place handle lever (5) in vertical position.

**3.** Remove screws and cover plate (20).

**4.** Remove spring pressure on locking ring (6) by turning adjusting screw (17) counter-clockwise.

**5.** All locking mechanism parts can then be removed.

Clean and check each part for wear or damage. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor.

REASSEMBLE all parts of **Standard Locking Mechanisms** as per the exploded view, setting adjusting screw to desired pressure

| Index No. | Part Name | MODEL NUMBER 3-SV 3-TS* 3-PA** Part No. | Price | 4-GM 4-TS* 4-GMPA** Part No. | Price | 6-SV 6-PA** Part No. | Price | 8-SV 8-PA** Part No. | Price |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Body Casting (Note 1) | 3-SV | | 4-GM | | 6-SV | | 8-SV | |
| 1 | Body Casting (Note 1) | 3-TS* | | 4-TS* | | | | | |
| 2 | Jaw Casting (Note 2) | 3-J | $6.23 | 4-J | $8.70 | 6-J | $12.44 | 8-J | $17.50 |
| 3 | Center Bar | 313 | 3.60 | GM-413 | 5.59 | 613 | 6.80 | 813 | 8.39 |
| 4 | Guide Bar | 314 | 2.00 | 414 | 2.23 | 614 | 4.39 | 814 | 6.23 |
| 5 | Handle | GM-3415 | .64 | GM-3415 | .64 | 6815 | .73 | 6815 | .73 |
| 5 | Handle | 3415* | .88 | 3415* | .88 | | | | |
| 6 | Locking Ring | SV-3416 (½" Hole) | 4.39 | GM-416 (⅝" Hole) | 6.23 | SV-6816 (¾" Hole) | 6.80 | SV-6816 (¾" Hole) | 6.80 |
| 7 | Holding Ring | PA-3416** | 3.60 | GMPA-416** | 5.59 | PA-6816** | 5.75 | PA-6816** | 5.75 |
| 8 | Spring, Locking | 3417 | .64 | GM-417 | .72 | 6817 | .80 | 6817 | .80 |
| 9 | Spring, Holding | PA-3417** | 1.20 | GMPA-417** | 1.20 | PA-6817** | .96 | PA-6817** | .96 |
| 10 | Crank | GM-3418 | 2.72 | GM-3418 | 2.72 | GM-6818 | 4.39 | GM-6818 | 4.39 |
| 10 | Crank | TS-3418* | 3.77 | TS-3418* | 3.77 | | | | |
| 10 | Crank, with ⅛" Rollpin | GMPA-3418** | 3.60 | GMPA-3418** | 3.60 | GMPA-6818** | 5.59 | GMPA-6818** | 5.59 |
| 11 | Jaw Inserts, soft (Set of 2)(Note 3) | 319 | 2.72 | 419 | 3.60 | 619 | 5.59 | 819 | 7.19 |
| 11 | Jaw Inserts, hard (Set of 2) (Note 4) | 319H | 4.05 | 419H | 5.19 | 619H | 7.19 | 819H | 8.79 |
| 12 | Knob, Black — 1" Dia., ¼-20 thread | SV-3421 | .48 | SV-3421* | .48 | | | | |
| 12 | Knob, Red — 1" Dia., ¼-20 thread | RSV-3421** | .89 | | | | | | |
| 12 | Knob, Black — 1⅜" Dia., ⅜-24 thread | | | GM-3421 | .73 | | | | |
| 12 | Knob, Red — 1⅜" Dia., ⅜-24 thread | | | RGM-3421** | 1.10 | | | | |
| 12 | Knob, Black — 1½" Dia., ⅜-24 thread | | | | | SV-6821 | .73 | SV-6821 | .73 |
| 12 | Knob, Red — 1½" Dia., — ⅜-24 thread | | | | | RSV-6821** | 1.10 | RSV-6821** | 1.10 |
| 13 | Knob, Black — 1⅛" Dia. x 1 7/16 Oval — ⅜-16 thread | OA-3421 | .75 | OA-3421 | .75 | | | | |
| 13 | Knob, Red — 1⅛" Dia. x 1 7/16 Oval — ⅜-16 thread | ROA-3421** | 1.44 | ROA-3421** | 1.44 | | | | |
| 14 | Stud | 3423 | .25 | 6823 | .31 | 6823 | .31 | 6823 | .31 |
| 15 | Screw — 10-32 x ¼ | 27 | .15 | 27 | .15 | 27 | .15 | 27 | .15 |
| 16 | Screw — ¼-20 x ⅝ | (2) 30-⅝ | .25 | | | | | | |
| 16 | Screw — ¼-20 x ¾ | (2) 30-¾ | .25 | (6) 30-¾ | .25 | (6) 30-¾ | .25 | (6) 30-¾ | .25 |
| 17 | Adjusting Screw | SV-31 | .48 | SV-31 | .48 | SV-31 | .48 | SV-31 | .48 |
| 18 | Adjusting Screw — Female | PA-32** | 1.44 | PA-32** | 1.44 | PA-32** | 1.44 | PA-32** | 1.44 |
| 19 | Adjusting Screw — Male | PA-33** | 1.20 | PA-33** | 1.20 | PA-33** | 1.20 | PA-33** | 1.20 |
| 20 | Cover Plate | 3437 | .48 | 3437 | .48 | 6837 | .64 | 6837 | .64 |
| 21 | Shoulder Screw | 39 | .56 | 39 | .56 | 39 | .56 | 39 | .56 |

**Note 1.** Price not shown, as replacement body castings are not available. View shown is 4-GM with side extension. Models 3-SV, 6-SV and 8-SV do not have side extensions. 3-TS and 4-TS have both sides ground at right angles to jaw inserts.

**Note 2.** Jaw castings are furnished with bar holes drilled and bored only. If complete jaw is required, vise must be returned to factory so that replacement jaw can be machined in assembly with the stationary jaw. Charge for special machining — $26.35.

**Note 3.** Replacement jaw inserts are formed angle sections, with tapped mounting holes. If machined jaw inserts are desired, they must be milled or ground assembled in customer's vise. Our charge for special machining of soft or hard jaw inserts is $13.18 shipping charges to be paid by the customer.

**Note 4.** For vises furnished with special hardened jaws, ground in assembly, add $15.00 to the price of each unit.

Recommended spare parts to be retained in stock at all times to support each unit in service: Index (6) Locking Ring, Index (11) Jaw Inserts, Index (3) Center Bar. If vise is ten years or older and certain parts do not look like the exploded view, indicate "old style" when ordering parts.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

before replacing locking plate. To assemble **Pumping Action "PA" Locking Mechanisms,** the following steps must be carefully followed:

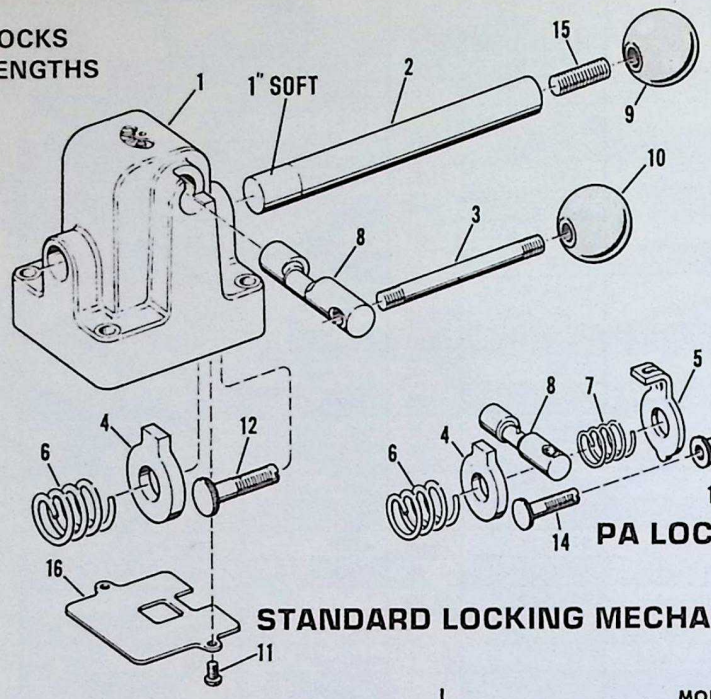
1. Insert crank (10), keeping handle lever (5) in vertical position during entire assembly.
2. Insert rear portion of adjusting screw (18), screwing same in as far as it will go.
3. Place the holding ring (7) behind crank so that the pin extending from the crank fits into the slot of the holding ring.
4. Insert center bar (3) through the holding ring far enough so that the holding spring (9) can be slipped on.
5. Insert front portion of the adjusting screw (19) as far as it will go.
6. Insert locking ring (6) and push center bar through same.
7. Insert locking spring (8), locating same correctly in relation to the center hole.
8. Adjust both adjusting screws until the rear portion (18) makes contact with the holding ring and the front portion (19) makes contact with the locking ring.
9. Push center bar through entire unit.
10. Turn adjusting screw front portion (19) a 3/4 turn clockwise, and adjust rear portion (18) until the bar moves freely — making sure that the handle lever is in vertical position against stop.
11. Adjust forward portion of adjusting screw (19) until desired pressure is obtained.

# Grip-Master FIXTURE LOCKS

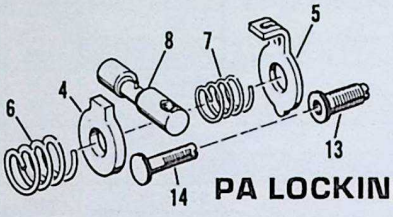
## PRICES OF FIXTURE LOCKS WITH SPECIAL BAR LENGTHS

| | 2-FL | 2-PA |
|---|---|---|
| 10" | $35.59 | $45.16 |
| 12" | 36.31 | 45.88 |
| 14" | 37.51 | 47.08 |
| 16" | 38.47 | 48.04 |
| 18" | 39.51 | 49.07 |
| 20" | 40.53 | 50.11 |
| 24" | 42.69 | 52.26 |

| | 9-FL | 9-PA |
|---|---|---|
| 12" | $43.89 | $56.66 |
| 14" | 44.53 | 57.29 |
| 16" | 45.25 | 58.03 |
| 18" | 45.97 | 58.73 |
| 20" | 46.85 | 59.61 |
| 24" | 48.84 | 61.60 |




## Parts List and Instructions




PA LOCKING MECHANISM

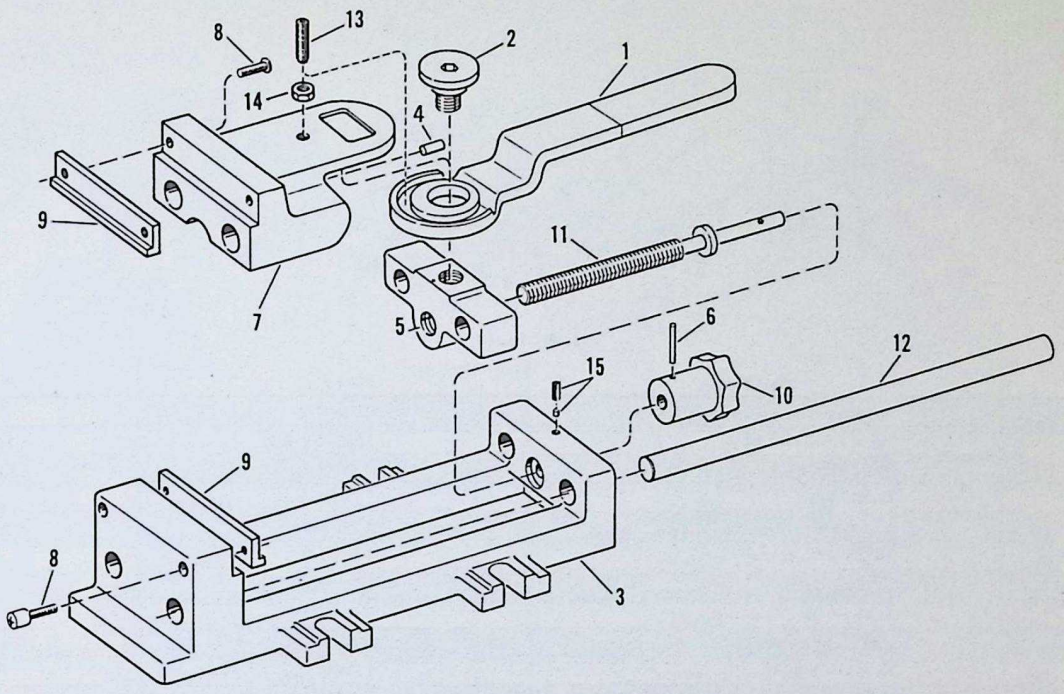
STANDARD LOCKING MECHANISM

| Index No. | Part Name | MODEL NUMBER 2-FL 2-PA** Part No. | Price | 9-FL 9-PA** Part No. | Price |
|---|---|---|---|---|---|
| 1 | Body Casting | 2-FL | | 9-FL | |
| 2 | Bar, Locking, Standard | 213-9" | $4.39 | 913-10" | $6.23 |
| 2 | Bar, Special | 213-10" | 5.27 | | |
| 2 | Bar, Special | 213-12" | 5.98 | 913-12" | 8.61 |
| 2 | Bar, Special | 213-14" | 7.19 | 913-14" | 9.25 |
| 2 | Bar, Special | 213-16" | 8.14 | 913-16" | 9.99 |
| 2 | Bar, Special | 213-18" | 9.19 | 913-18" | 10.69 |
| 2 | Bar, Special | 213-20" | 10.21 | 913-20" | 11.58 |
| 2 | Bar, Special | 213-24" | 12.38 | 913-24" | 13.57 |
| 3 | Handle | GM-3415 | .64 | 6815 | .80 |
| 4 | Locking Ring | SV-3416 | 4.39 | SV-6816 | 6.80 |
| 5 | Holding Ring | PA-3416** | 3.60 | PA-6816** | 5.75 |
| 6 | Spring, Locking | 3417 | .64 | 6817 | .80 |
| 7 | Spring, Holding | PA-3417** | 1.20 | PA-6817** | .96 |
| 8 | Crank | GM-3418 | 2.72 | GM-6818 | 4.39 |
| 8 | Crank, with ⅛" Pin | GMPA-3418** | 3.60 | GMPA-6818** | 5.59 |
| 9 | Knob, Black, 1" Dia. — ¼-20 thread | SV-3421 | .48 | | |
| 9 | Knob, Red, 1" Dia. — ¼-20 thread | RSV-3421** | .89 | | |
| 10 | Knob, Black, 1⅛" Dia. x 1 7/16 Oval — ⅜-16 thread | OA-3421 | .75 | | |
| 10 | Knob, Red — 1⅛" Dia. x 1 7/16 Oval — ⅜-16 thread | ROA-3421** | 1.44 | | |
| 9 | Knob, Black — 1½" Dia. — ⅜-24 thread | | | SV-6821 | .73 |
| 9 | Knob, Red — 1½" Dia. — ⅜-24 thread | | | RSV-6821** | 1.10 |
| 11 | 10-32 x ¼ Screw (2 required) | 27 | .15 | 27 | .15 |
| 12 | Adjusting Screw | SV-31 | .48 | SV-31 | .48 |
| 13 | Adjusting Screw — Female | PA-32** | 1.44 | PA-32** | 1.44 |
| 14 | Adjusting Screw — Male | PA-33** | 1.20 | PA-33** | 1.20 |
| 15 | Stud | 3423 | .25 | 6823 | .31 |
| 16 | Cover Plate | 3437 | .48 | 6837 | .64 |

Recommended spare part to be retained in stock at all times to support each unit: Index (4) locking ring, Index (2) bar.

SEE OPERATION AND MAINTENANCE INSTRUCTIONS FOR GRIP-MASTER VISES ON PAGES 24 & 25.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**




MODEL 4-CL

| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Handle Lever | 4CL-1 | $16.37 |
| 2 | Lever Shoulder Screw | 4CL-2 | 2.40 |
| 3 | Body Casting (Note 1) | 4CL-3 | |
| 4 | Wear Plug | 4CL-4 | 1.20 |
| 5 | Cam Support Adjusting Nut | 4CL-5 | 11.06 |
| 6 | ⅛ x ⅞ Rollpin | 4CL-6 | .25 |
| 7 | Jaw Casting (Note 2) | 4CL-7 | 21.95 |
| 8 | ¼-20 x ¾ Screw (4 required) | 30-¾ | .25 |
| 9 | Jaw Inserts (Set of 2) — soft (Note 3) | 419 | 3.60 |
| 9 | Jaw Inserts (Set of 2) — hard (Note 4) | 419H | 5.19 |
| 10 | Hand Knob | 4CL-12 | 2.23 |
| 11 | Center Adjusting Screw | 4CL-13 | 9.25 |
| 12 | Guide Bar (2 required) | 4CL-14 | 2.72 |
| 13 | ¼-20 x ⅞ Screw | 4CL-15 | .28 |
| 14 | ¼-20 Nut | 4CL-16 | .15 |
| 15 | ¼-28 x ½ Set Screw, with slug | 4CL-17 | .25 |

**Note 1.** Price not shown as replacement body casting is not available.

**Note 2.** Jaw castings are furnished with bar holes drilled and bored only. If complete jaw is required, vise must be returned to factory so that replacement jaw can be machined in assembly with the stationary jaw. Charge for special machining — $26.35.

**Note 3.** Replacement jaw inserts are formed angle sections with tapped mounting holes. If machined jaw inserts are desired, they must be milled or ground assembled in customer's vise. Our charge for special machining of soft or hard jaw inserts is $13.18, shipping charges to be paid by customer.

**Note 4.** For vises furnished with special hardened jaws, ground in assembly, add $15.00 to the price of each unit.

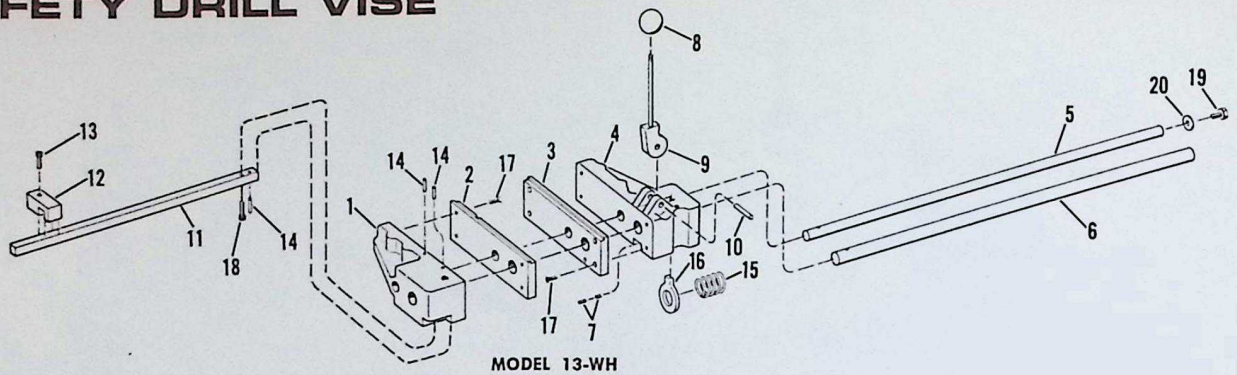
**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

## MAINTENANCE:

Locking lever may be removed as follows: Loosen lock nut (14) and remove set screw (13). Jaw casting (7) may then be moved to expose handle lever (1) for removal.

Clean and check each part for wear or damage. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor.

## SAFETY DRILL VISE




MODEL 13-WH

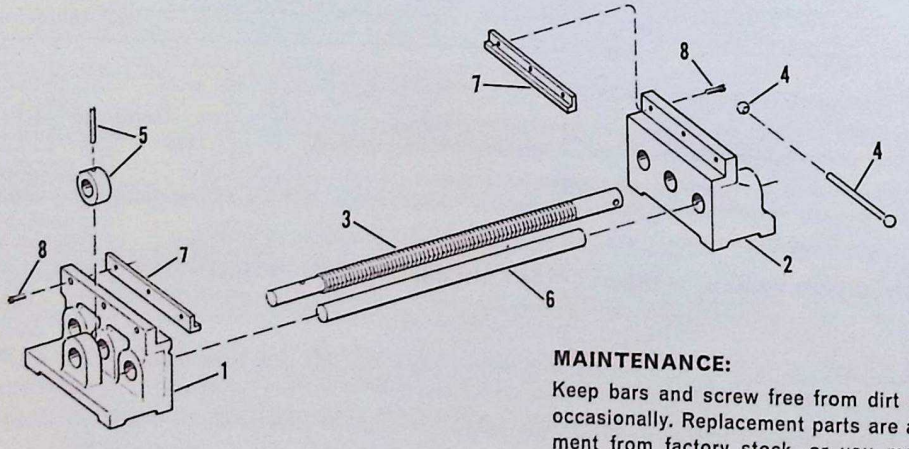
| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Stationary Jaw Casting (Note 1) | 13WH-1 | |
| 2 & 3 | False Jaws (Set of 2) | 13WH-2 & 3 | $11.98 |
| 4 | Movable Jaw Casting (Note 1) | 12WH-4 | |
| 5 | Guide Bar | 12WH-5 | 2.23 |
| 6 | Locking Bar | 12WH-6 | 9.76 |
| 7 | ¼-20 x ¼ Screw | 12WH-8 | .25 |
| 7-A | ¼-20 x ½ Screw | 12WH-8A | .25 |
| 8 | Knob — ⅜-24 thread | SV-6821 | .73 |
| 9 | Handle Lever Assembly | 12WH-11 | 6.38 |
| 10 | 5/16 x 1⅛ Rollpin | 12WH-12 | .25 |
| 11 | Mounting Bar | 13WH-13 | 5.75 |
| 12 | Mounting Block | 13WH-14 | 5.42 |
| 13 | ⅜-16 x 1½ Screw | 13WH-15 | .55 |
| 14 | 3/16 x 1⅛ Rollpin (3 required) | 2316-A | .15 |
| 15 | Spring | PA-6817 | .96 |
| 16 | Locking Ring | SV-6816 | 6.80 |
| 17 | ¼-20 x ½ Screw (8 required) | 30-½ | .25 |
| 18 | ¼-20 x ⅞ Screw | 305-8 | .31 |
| 19 | 5/16-18 x ⅞ Screw | 33-17 | .31 |
| 20 | ¼" Washer | 305-26 | .15 |

Note 1. Prices not shown, as replacement jaw castings are not available.

SEE OPERATION AND MAINTENANCE INSTRUCTIONS FOR GRIP-MASTER VISES ON PAGES 24 & 25.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

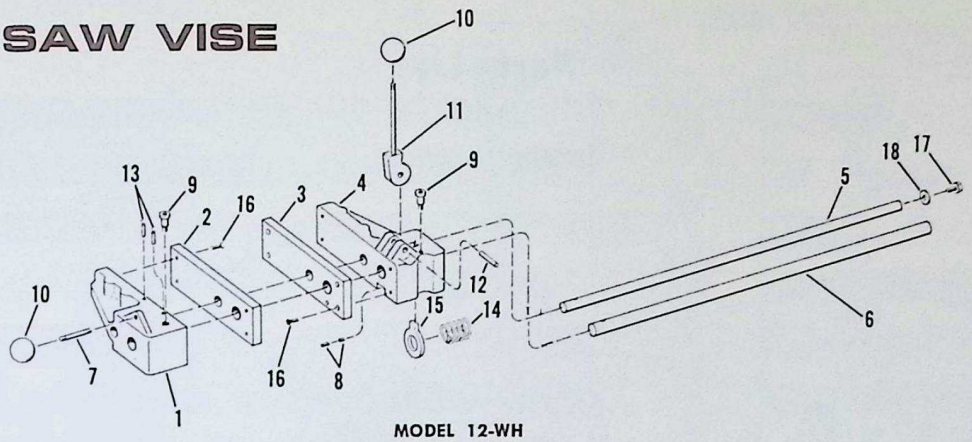
## DRILL PRESS VISE




**MAINTENANCE:**

Keep bars and screw free from dirt and chips. Oil moving parts occasionally. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor.

# BAND SAW VISE




MODEL 12-WH

| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Stationary Jaw Casting (Note 1) | 12WH-1 | |
| 2 & 3 | False Jaws (Set of 2) | 12WH-2 & 3 | $10.69 |
| 4 | Movable Jaw Casting (Note 1) | 12WH-4 | |
| 5 | Guide Bar | 12WH-5 | 2.23 |
| 6 | Locking Bar | 12WH-6 | 9.76 |
| 7 | Handle Stud | 12WH-7 | .96 |
| 8 | ¼-20 x ¼ Screw | 12WH-8 | .25 |
| 8A | ¼-20 x ½ Screw | 12WH-8A | .25 |
| 9 | Chain Stud (2 required) | 12WH-9 | 1.54 |
| 10 | Knob — ⅜-24 thread (2 required) | SV-6821 | .73 |
| 11 | Handle Lever Assembly | 12WH-11 | 6.38 |
| 12 | 5/16 x 1⅛ Rollpin | 12WH-12 | .25 |
| 13 | 3/16 x 1⅛ Rollpin (2 required) | 2316-A | .15 |
| 14 | Spring | PA-6817 | .96 |
| 15 | Locking Ring | SV-6816 | 6.80 |
| 16 | ¼-20 x ½ Screw (8 required) | 30-½ | .25 |
| 17 | 5/16-18 x ⅞ Screw | 33-17 | .31 |
| 18 | ¼" Washer | 305-26 | .15 |

**Note 1.** Prices not shown, as replacement jaw castings are not available. Jaws must be machined in pairs.

SEE OPERATION AND MAINTENANCE INSTRUCTIONS FOR GRIP-MASTER VISES ON PAGES 24 & 25.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

| Index No. | Part Name | MODEL NUMBER 10 | | 20 | | 30 | |
|---|---|---|---|---|---|---|---|
| | | Part No. | Price | Part No. | Price | Part No. | Price |
| 1 | Movable Jaw Casting (Note 1) | 10A | | 20A | | 30A | |
| 2 | Stationary Jaw Casting (Note 1) | 10B | | 20B | | 30B | |
| 3 | Screw | 1013 | $5.91 | 2313 | $9.25 | 2313 | $9.25 |
| 4 | Handle, with Two Buttons | 1015 | 1.30 | 2315 | 2.02 | 2315 | 2.02 |
| 5 | Collar, with Rollpin | 1016 | 1.54 | 2316 | 2.72 | 2316 | 2.72 |
| 6 | Guide Bar | 1014 | 1.39 | 2014 | 3.28 | 3014 | 5.03 |
| 7 | Jaw Inserts (set of 2) — soft (Note 2) | 319 | 2.72 | 2018 | 5.59 | 3018 | 7.19 |
| 7 | Jaw Inserts (set of 2) — hard (Note 3) | 319H | 4.05 | 2018H | 7.19 | 3018H | 8.79 |
| 8 | ¼-20 x ¾ Screw (6 required) | — | | 30-¾ | .25 | 30-¾ | .25 |
| 8 | ¼-20 x ½ Screw (4 required) | 30-½ | .25 | — | | — | |

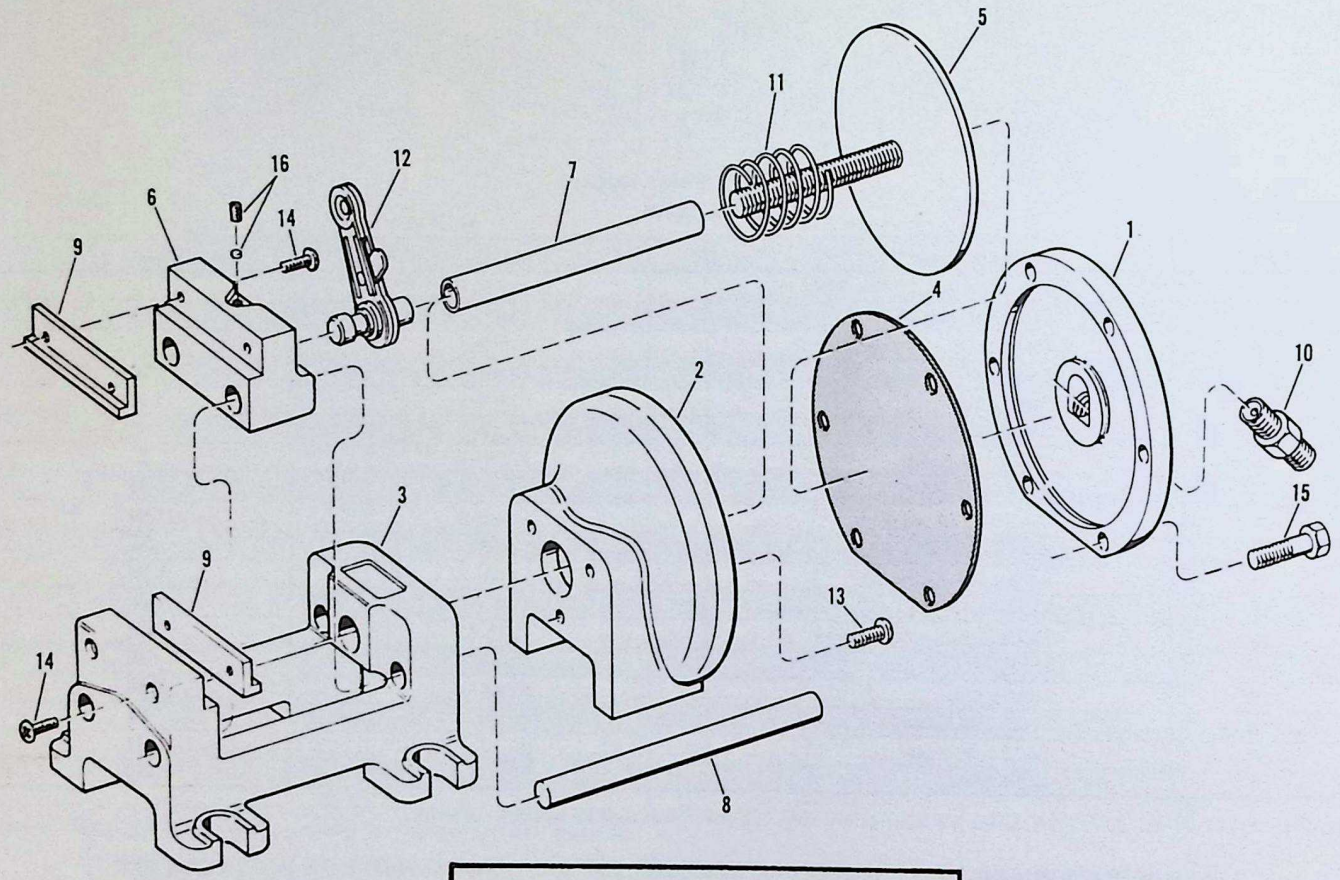
**Note 1.** Price not shown as replacement jaw castings are not available, as jaws are machined in pairs.

**Note 2.** Replacement jaw inserts are formed angle sections, with tapped mounting holes. If machined jaw inserts are desired, they must be milled or ground assembled in customer's vise. Our charge for special machining of soft or hard jaw inserts is $13.18, shipping charges to be paid by customer.

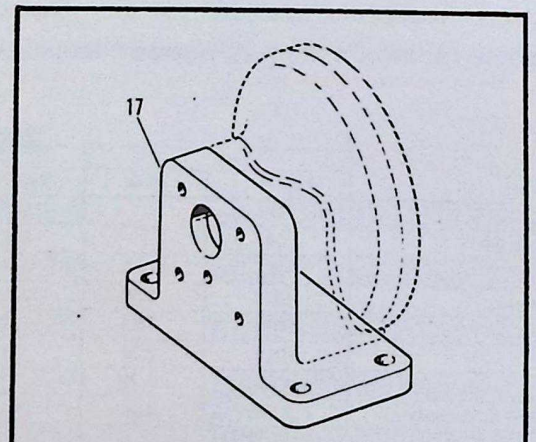
**Note 3.** For vises furnished with special hardened jaws, ground in assembly, add $15.00 to the price of each unit.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

## Parts List and Instructions




CAUTION: For maximum operator protection when the setup might cause the employee to place his hands or fingers within the point of operation, we suggest a two-hand control device, available through your air accessories distributor.




AIR CLAMP BRACKET CASTING

| Index No. | Part Name | MODEL NUMBER 33 Vise 55-3 Clamp Part No. | 33 Vise 55-3 Clamp Price | 44-Vise 55-4 Clamp Part No. | 44-Vise 55-4 Clamp Price |
|---|---|---|---|---|---|
| 1 | Cylinder Head | 33-1 | $6.50 | 33-1 | $6.50 |
| 2 | Cylinder Body | 33-2 | 9.97 | 33-2 | 9.97 |
| 3 | Body Casting (Note 1) | 33-3 | | 44-3 | |
| 4 | Diaphragm | 33-4 | 2.72 | 33-4 | 2.72 |
| 5 | Piston Head, with Adjusting Screw | 33-5 | 7.06 | 44-5 | 7.23 |
| 6 | Jaw Casting (Note 2) | 33-7 | 10.03 | 44-7 | 11.10 |
| 7 | Center Bar Nut | 33-13 | 3.50 | 44-13 | 3.69 |
| 8 | Guide Bars (2 required) | 314 | 2.00 | 44-14 | 2.31 |
| 9 | Jaw Inserts — soft (Note 3) (set of 2) | 319 | 2.72 | 44-19 | 3.60 |
| 9 | Jaw Inserts — hard (Note 4) (set of 2) | 319H | 4.05 | 44-19H | 5.19 |
| 10 | Adapter | 33-16 | .88 | 33-16 | .88 |
| 11 | Cylinder Spring | 33-24 | 1.65 | 33-24 | 1.65 |
| 12 | Ratchet Assembly | 33-25 | 6.36 | 33-25 | 6.36 |
| 13 | 5/16-18 x 3/4 Screw (3 req.) | 33-8 | .31 | 33-8 | .31 |
| 14 | 1/4-20 x 1/2 Screw (2 req.) | 30-1/2 | .25 | | |
| 14 | 1/4-20 x 5/8 Screw (2 req.) | | | 30-5/8 | .25 |
| 14 | 1/4-20 x 3/4 Screw (2 req.) | 30-3/4 | .25 | 30-3/4 | .25 |
| 15 | 5/16-18 x 7/8 Screw (6 req.) | 33-17 | .31 | 33-17 | .31 |
| 16 | 1/4-28 x 5/8 Screw with locking slug | 33-18 | .31 | 33-18 | .31 |
| 17 | Bracket Casting | 55-1 | 34.32 | 55-1 | 34.32 |

**Note 1.** Price not shown, as replacement body castings are not available.

**Note 2.** Jaw castings are furnished with bar holes drilled and bored only. If complete jaw is required, vise must be returned to factory so that replacement jaw can be machined in assembly with the stationary jaw. Charge for special machining — $26.35.

**Note 3.** Replacement jaw inserts are formed angle sections, with tapped mounting holes. If machined jaw inserts are desired, they must be milled or ground assembled in customer's vise. Our charge for special machining of soft or hard jaw inserts is $13.18, shipping charges to be paid by the customer.

**Note 4.** For vises furnished with special hardened jaws, ground in assembly, add $15.00 to the price of each unit.

Recommended spare parts to be retained in stock at all times to support each unit in service: Index (4) Diaphragm, Index (9) Jaw Inserts.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

## OPERATION:

Connect one of the two identical hoses to the adapter on the air cylinder and to the side fitting on the three-way valve, marked "OUT." Connect the other hose to the end adapter on the valve marked "IN" and to the air supply line.

Heinrich air units can be used safely on air supply lines with pressures up to 150 psi.

To adjust jaw opening, **first loosen the locking set screw on the top of the movable jaw,** allowing just a slight amount of tension on the ratchet plug; then the ratchet will move freely to adjust the jaw to the desired opening. For maximum speed of operation and life of diaphragm, a stroke of no more than 1/16" is recommended. After setting Heinrich air vises, **the set screw on top of the movable jaw should be locked securely.**

The range of holding power can be controlled by installing our No. R11-200-RLG Air Regulator between the air supply line and the three-way valve.

While all operating parts are protected from oils, coolants, chips, etc., the air cylinder and controls could be damaged by foreign matter in the air supply line. This can be prevented by using our No. F11-200-M3T Air Filter between the air supply and the air regulator and/or control valve. Our compact No. B11-221-M3L Combination Filter-Regulator may be used in place of the individual filter and regulator.

## MAINTENANCE:

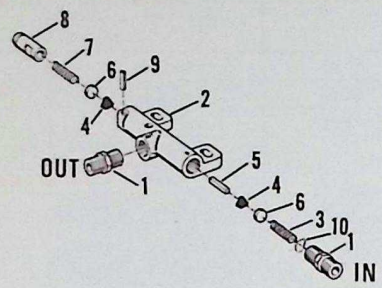
An occasional oiling of the guide and center bars is recommended. Disassemble the air cylinder as follows: First, shut off the air supply; clamp the movable jaw tightly to the stationary jaw with a C-Clamp (and do not remove until the cylinder head (1) is securely replaced); then remove the six screws and cylinder head (1). Care should be taken in removal of the piston head with adjusting screw (5) because of the tension on the cylinder spring (11).

To remove ratchet (12) from center bar nut (7), remove piston head with adjusting screw (5), insert 3/8" dia. x 2" long pin in center bar nut (7). Thread piston (5) into center bar nut (7) until ratchet is forced off from its press fit in the center bar nut. To remove ratchet (12) from jaw (6), remove set screw (16), and tap or drill out slug (16).

Clean and check each part for wear or damage. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor.

After replacing diaphragm and cylinder head, screws should be evenly and firmly tightened.

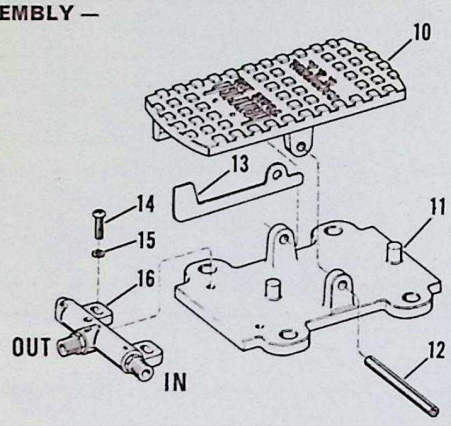
## NO. 34 THREE-WAY AIR VALVE ASSEMBLY —




| Index No. | Part Name | Part No. | |
|---|---|---|---|
| 1 | Adapter (2 required) | 33-16 | $.88 |
| 2 | Valve Body | 34-2 | 3.12 |
| 3 | Inlet Spring | 34-3 | .41 |
| 4 | Poppet (2 required) | 34-4 | .25 |
| 5 | Brass Pin | 34-5 | .31 |
| 6 | Brass Slug for Backing Poppet (2 required) | 34-6 | .18 |
| 7 | Outlet Plunger Spring | 34-7 | .56 |
| 8 | Plunger | 45-8 | 1.02 |
| 9 | 1/8 x 3/4 Rollpin | 34-9 | .15 |
| 10 | Retaining Ring | 34-10 | .15 |
| REPAIR KIT FOR NO. 34 AIR VALVE ASSEMBLY, CONSISTING OF INDEX NUMBERS 3 thru 9 | | | 2.79 |

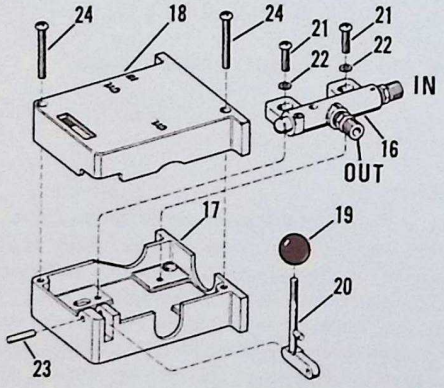
It is recommended that a repair kit be retained in stock at all times to support the valve in service.

## NO. 34-12CI THREE-WAY FOOT TREADLE VALVE ASSEMBLY —




| | | | |
|---|---|---|---|
| 10 | Foot Treadle Casting — Top | 34-15 | $4.39 |
| 11 | Foot Treadle Casting — Bottom | 34-16 | 4.39 |
| 12 | 5/16 x 3 1/4 Rollpin | 34-11 | .52 |
| 13 | Wear Strip | 34-17 | .61 |
| 14 | 10-32 x 5/8 Screw (2 required) | 34-13 | .25 |
| 15 | 3/16 Int. Star Washer (2 required) | 34-18 | .15 |
| 16 | Valve Assembly | 34 | 7.83 |

## NO. 34-18 THREE-WAY HAND OPERATED VALVE ASSEMBLY —




| | | | |
|---|---|---|---|
| 17 | Base Casting | 45-19 | $11.98 |
| 18 | Cover Casting | 45-20 | 8.39 |
| 19 | Knob, 1" Dia., 1/4-20 thread | SV-3421 | .48 |
| 20 | Lever, with stop pin | 34-22 | 4.29 |
| 21 | 10-32 x 5/8 Screw (2 required) | 34-13 | .25 |
| 22 | 3/16 Int. Star Washer (2 required) | 34-18 | .15 |
| 23 | 3/16 x 3/4 Dowel | 45-23 | .48 |
| 24 | 10-32 x 1 1/4 Screw (2 required) | 45-24 | .31 |
| 16 | Valve Assembly | 34 | 7.83 |

### MAINTENANCE:

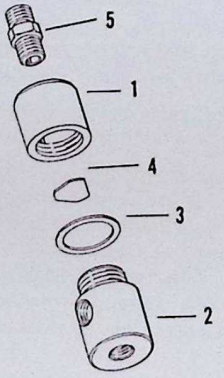
If the No. 34 Three-Way Air Valve becomes inoperable, disassemble, clean and check each part for wear or damage, especially the seats in the valve body. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor. When re-assembling, all parts must be placed in the order as shown in the exploded view.

### OPERATION:

Slotted mounting holes are provided in the valve body so that the position of the valve on the foot or hand base may be adjusted. The valve should be so positioned that air does not escape in either open or closed position. This can be determined by the sound of air escaping. Mounting screws should be securely fastened after adjustment.

The plunger (8) on the valve should be greased occasionally.

## HEINRICH NO. 37 QUICK EXHAUST VALVE —



| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Adapter (3 required) | 33-16 | $.88 |
| 2 | Valve Body | 45-2 | 4.39 |
| 3 | Inlet Spring (2 required) | 34-3 | .41 |
| 4 | Poppet (4 required) | 34-4 | .25 |
| 5 | Brass Pin (2 required) | 34-5 | .31 |
| 6 | Brass Slug for Backing Poppet (4 required) | 34-6 | .18 |
| 7 | Outlet Plunger Spring (2 required) | 34-7 | .56 |
| 8 | Plunger (2 required) | 45-8 | 1.02 |
| 9 | ¼-18 Socket Pipe Plug (2 required) | 45-9 | .48 |
| 10 | ¼ x ⅜ Dowel | 45-10 | .48 |
| **REPAIR KIT FOR NO. 45 AIR VALVE ASSEMBLY, CONSISTING OF INDEX NUMBERS 3 thru 8** | | | $5.27 |

It is recommended that a repair kit be retained in stock at all times to support the valve in service.

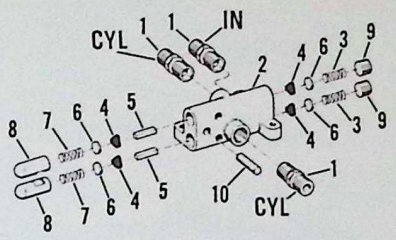
| | | | |
|---|---|---|---|
| 11 | Foot Treadle Casting — Top | 45-15 | $6.23 |
| 12 | Foot Treadle Casting — Bottom | 45-16 | 6.70 |
| 13 | Roller | 45-17 | 1.54 |
| 14 | 5/16" Dia. x 3¼ Rollpin | 34-11 | .52 |
| 15 | 3/16 x ¾ Dowel | 45-23 | .48 |
| 16 | 10-32 x ⅝ Screw (2 required) | 34-13 | .25 |
| 17 | 3/16 Int. Star Washer (2 required) | 34-18 | .15 |
| 18 | Valve Assembly | 45 | 16.76 |

| | | | |
|---|---|---|---|
| 19 | Base Casting | 45-19 | $11.98 |
| 20 | Cover Casting | 45-20 | 8.39 |
| 21 | Knob, 1" dia., ¼-20 thread | SV-3421 | .48 |
| 22 | Lever | 45-22 | 4.29 |
| 23 | 3/16 x ¾ Dowel | 45-23 | .48 |
| 24 | 10-32 x 1¼ Screw (2 required) | 45-24 | .31 |
| 25 | 10-32 x ⅝ Screw (2 required) | 34-13 | .25 |
| 26 | 3/16 Int. Star Washer | 34-18 | .15 |
| 18 | Valve Assembly | 45 | 16.76 |

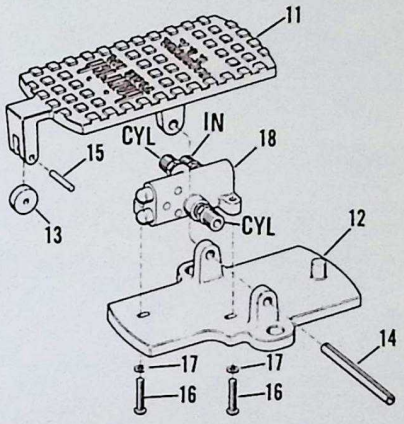
**MODEL 37**

| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Body, Female | 37-1 | $5.02 |
| 2 | Body, Male | 37-2 | 7.83 |
| 3 | Gasket | 37-3 | .73 |
| 4 | Poppet | 37-4 | .73 |
| 5 | Adapter | 33-16 | .88 |

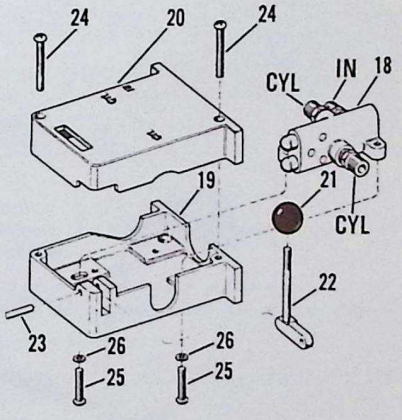
**NO. 45 FOUR-WAY AIR VALVE ASSEMBLY —**




**NO. 45-12CI FOUR-WAY FOOT TREADLE VALVE ASSEMBLY —**




**NO. 45-18 FOUR-WAY HAND VALVE ASSEMBLY**




**MAINTENANCE:**

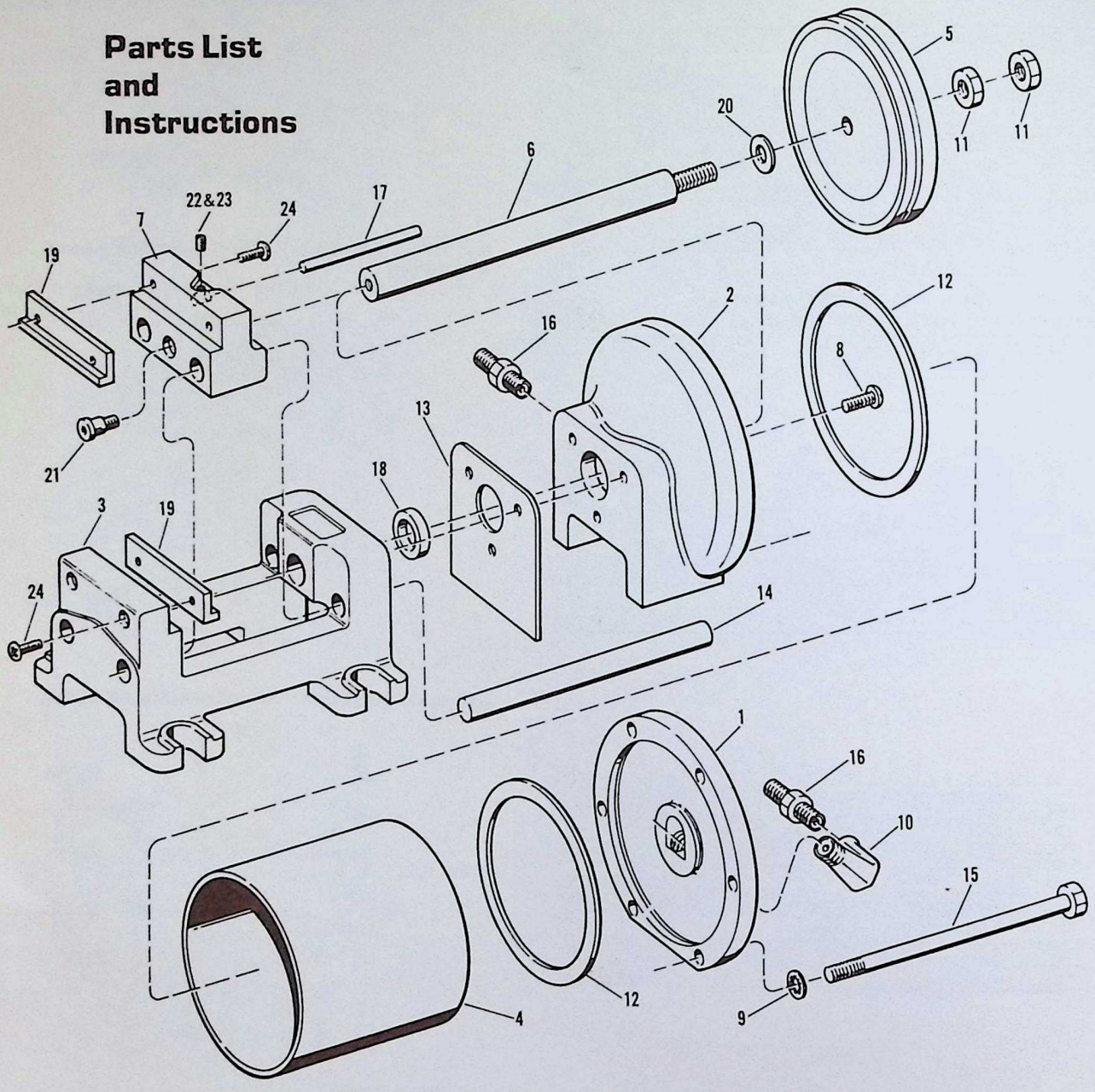
If the No. 45 Four-Way Air Valve becomes inoperable, disassemble, clean and check each part for wear or damage, especially the seats in the valve body. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor. When re-assembling, all parts must be placed in the order as shown in the exploded view.

**OPERATION:**

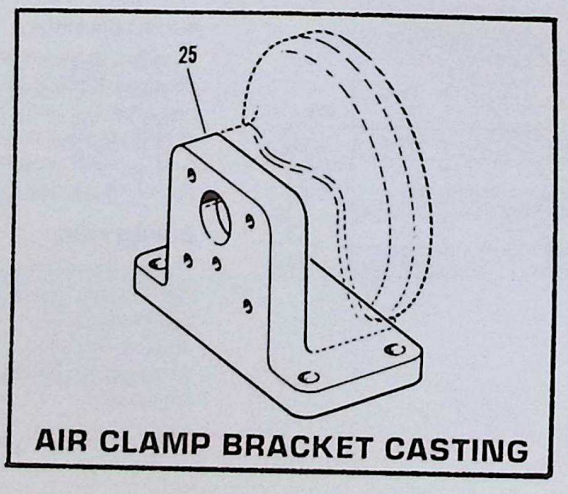
Slotted holes are provided in the foot or hand base castings so that the position of the valve on the base may be adjusted. The valve should be so positioned that air does not escape in either open or closed position. This can be determined by the sound of air escaping. Mounting screws should be securely fastened after adjustment.

The plungers (8) on the valve should be greased occasionally.

## Parts List and Instructions




CAUTION: For maximum operator protection when the setup might cause the employee to place his hands or fingers within the point of operation, we suggest a two-hand control device, available through your air accessories distributor.




AIR CLAMP BRACKET CASTING

| Index No. | Part Name | MODEL NUMBER DA-3301 VISE DA-5503 CLAMP Part No. | Price | DA-4401 VISE DA-5504 CLAMP Part No. | Price | DA-6601 VISE Part No. | Price |
|---|---|---|---|---|---|---|---|
| 1 | Cylinder Head | 3301-1 | $7.60 | 3301-1 | $7.60 | 6601-1 | $15.84 |
| 2 | Cylinder Body | 3301-2 | 13.18 | 3301-2 | 13.18 | — | |
| 3 | Body Casting (Note 1) | 33-3 | | 44-3 | | 6601-3 | |
| 4 | Cylinder Tube | 3301-4 | 15.15 | 4401-4 | 19.02 | 6601-4 | 32.79 |
| 5 | Piston Cup (No. on Part) | 3301-5 (CB-28414) | 12.77 | 3301-5 (CB-28414) | 12.77 | 6601-5 (CB-28500) | 18.76 |
| 6 | Piston Rod for Vise | 3301-6 | 4.51 | 4401-6 | 5.30 | 6601-6 | 10.13 |
| 6 | Piston Rod for Clamp | 5503-6 | 6.70 | 5504-6 | 7.02 | 6607-6 | 15.48 |
| 7 | Jaw Casting (Note 2) | 3301-7 | 10.77 | 4401-7 | 12.47 | 6601-7 | 37.90 |
| 8 | 5/16-18 x 3/4 Screw | 33-8 | .31 | 33-8 | .31 | — | |
| 9 | 5/16" I.D. Star Washer | 3301-9 | .15 | 3301-9 | .15 | 3301-9 | .15 |
| 10 | Elbow | 2200-33 | 1.61 | 2200-33 | 1.61 | — | |
| 11 | 1/2-20 x 1/4 Nut (2) | 3301-11 | .28 | 3301-11 | .28 | — | |
| 11 | 3/4-16 Jam Nut (2) | — | | — | | 6601-11 | .97 |
| 12 | Cylinder Gasket | 3301-12 | 1.05 | 3301-12 | 1.05 | 6601-12 | 1.60 |
| 13 | Body Gasket | 3301-13 | .66 | 3301-13 | .66 | — | |
| 14 | Guide Bar | 314 | 2.00 | 44-14 | 2.31 | 814 | 6.23 |
| 15 | Cylinder Tie Rod | 3301-15 | .75 | 4401-15 | .91 | 6601-15 | 1.35 |
| 16 | Adapter | 33-16 | .88 | 33-16 | .88 | 33-16 | .88 |
| 17 | Stop Bar | 3301-17 3/8" Dia. x 3 1/4" | .80 | 4401-17 3/8" Dia. x 4 3/4" | 1.30 | 6601-17 1/2" Dia. x 8 1/4" | 1.39 |
| 18 | U-Packing | 3301-18 | 1.06 | 3301-18 | 1.06 | 6601-18 | 1.60 |
| 19 | Jaw Inserts — soft (Set of 2) (Note 3) | 319 | 2.72 | 44-19 | 3.60 | 619 | 5.59 |
| 19 | Jaw Inserts — hard (Set of 2) (Note 4) | 319H | 4.05 | 44-19H | 5.19 | 619H | 7.19 |
| 20 | Stat-O-Seal | 600-1/2 | .89 | 600-1/2 | .89 | 600-3/4 | 1.16 |
| 21 | Shoulder Screw | 3301-39 | 1.75 | 3301-39 | 1.75 | 6601-39 | 4.39 |
| 22 | 1/4-28 x 3/8" Screw | 305-20 | .25 | 305-20 | .25 | — | |
| 23 | 1/4-20 x 1/4 Screw | — | | — | | 12WH-8 | .25 |
| 24 | 1/4-20 x 5/8 Screw | 30 5/8 | .25 | 30 5/8 | .25 | — | |
| 24 | 1/4-20 x 3/4 Screw | 30 3/4 | .25 | 30 3/4 | .25 | 30 3/4 | .25 |
| 25 | Bracket Casting | 55-1 | 34.32 | 55-1 | 34.32 | | |

**Note 1.** Price not shown, as replacement body castings are not available.

**Note 2.** Jaw castings are furnished with bar holes drilled and bored only. If complete jaw is required, vise must be returned to factory so that replacement jaw can be machined in assembly with the stationary jaw. Charge for special machining — $26.35.

**Note 3.** Replacement jaw inserts are formed angle sections, with tapped mounting holes. If machined jaw inserts are desired, they must be milled or ground assembled in customer's vise. Our charge for special machining of soft or hard jaw inserts is $13.18, shipping charges to be paid by the customer.

**Note 4.** For vises furnished with special hardened jaws, ground in assembly, add $15.00 to the price of each unit.

Recommended spare parts to be retained in stock at all times to support each unit in service: Index (5) Piston Cup, Index (12) Cylinder Gasket, Index (13) Body Gasket, Index (18) U-Packing, Index (19) Jaw Inserts.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

## OPERATION:

Connect one of the three identical hoses to the air supply line and to the adapter on the four-way valve marked "IN." Connect the other two hoses to the two adapters on the four-way valve marked "CYL" (cylinder) and to the two adapters on the cylinder.

Heinrich air units can be used safely on air supply lines with pressures up to 150 psi.

The amount of jaw return may be regulated by cutting off the stop bar (17) for size opening required.

The range of holding power can be controlled by installing our No. R11-200-RLG Air Regulator, between the air supply line and the four-way valve.

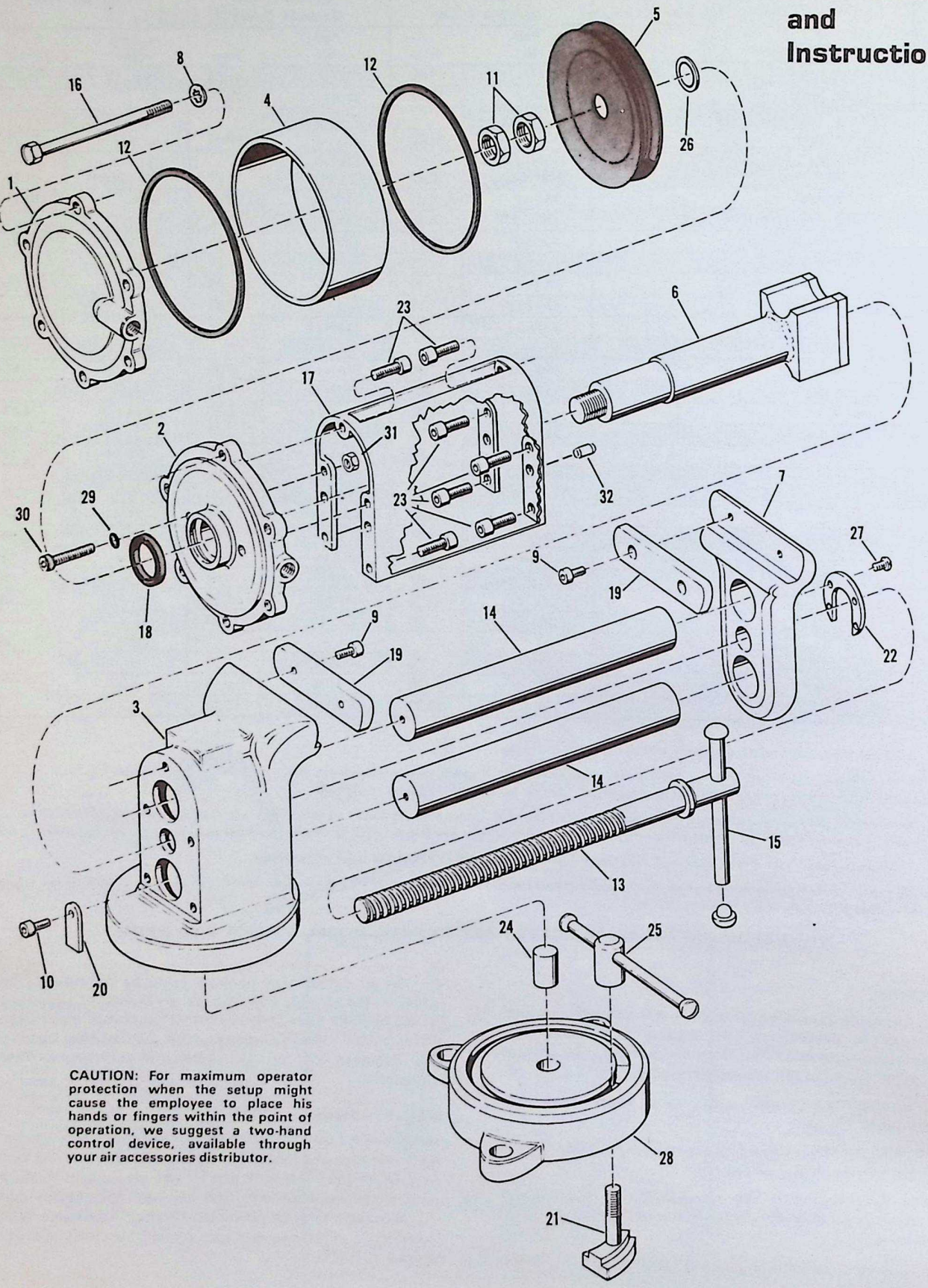
While all operating parts are protected from oils, coolants, chips, etc., the air cylinder and controls could be damaged by foreign matter in the air line. This can be prevented by using our No. F11-200-M3T Air Filter, between the air supply and the air regulator and/or control valve. Our compact No. B11-221-M3L Combination Filter-Regulator may be used in place of the separate filter and regulator.

## MAINTENANCE:

An occasional oiling of the guide bars and piston is recommended. If the vise becomes inoperable, disassemble as shown in exploded view. Clean and check each part for wear or damage. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor. When re-assembling, all screws and nuts should be evenly and securely tightened.

# PRODUCTION BENCH VISE

## Parts List and Instructions




**CAUTION:** For maximum operator protection when the setup might cause the employee to place his hands or fingers within the point of operation, we suggest a two-hand control device, available through your air accessories distributor.

MODEL 14

| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Cylinder Head | 8800-1 | $42.27 |
| 2 | Cylinder Body | 14-2 | 49.15 |
| 3 | Body Casting (Note 1) | 14-3 | |
| 4 | Cylinder Tube | 14-4 | 30.90 |
| 5 | Piston Cup — CB-28612 | 8800-5 | 39.51 |
| 6 | Draw Bar Weldment | 14-6 | 50.02 |
| 7 | Jaw Casting | 14-7 | 37.69 |
| 8 | 5/16" Internal Tooth Lock Washer (6 required) | 3301-8 | .15 |
| 9 | 1/4-20 x 1/2 Screw (4 required) | 30-1/2 | .25 |
| 10 | 1/4-20 x 1/2 Screw | 2200-42 | .25 |
| 11 | 3/4-16 Jam Nut (2 required) | 6600-11 | .97 |
| 12 | Cylinder Gasket (2 required) | 8800-12 | 2.23 |
| 13 | Screw | 14-13 | 24.23 |
| 14 | Guide Bar (2 required) | 14-14 | 33.53 |
| 15 | Handle, with two buttons | 2315 | 2.02 |
| 16 | 5/16-18 x 4 Screw (6 required) | 14-16 | 1.60 |
| 17 | Shroud Casting | 14-17 | 47.40 |
| 18 | 1 1/4" U-Packing | 8800-18 | 3.44 |
| 19 | Jaw Inserts (set of 2) — hard | 14-19 | 18.56 |
| 20 | Bar Stop | 14-20 | 1.75 |
| 21 | T-BOLT | 14-21 | 9.41 |
| 22 | C-Washer | 14-22 | 5.19 |
| 23 | 5/16-18 x 3/4 Screw (8 required) | 14-23 | .56 |
| 24 | Pivot Stud | H-62 | .88 |
| 25 | Swivel Clamp Assembly | 14-25 | 7.19 |
| 26 | Stat-O-Seal | 600-3/4 | 1.16 |
| 27 | 10-32 x 3/8 Screw (4 required) | 27 | .15 |
| 28 | Swivel Base Casting | 14-28 | 49.70 |
| 29 | O-Ring — ARP568A-011 (2 required) | 14-31 | .31 |
| 30 | 5/16-18 x 1 1/2 Screw (2 required) | 2200-45 | .48 |
| 31 | 5/16-18 Hex Nut (2 required) | 305-12 | .15 |
| 32 | 1/4 x 5/8 dowel (4 required) | 45-10 | .48 |

**Note 1:** Price not shown, as replacement body castings are not available.

Recommended spare parts to be retained in stock at all times to support each unit in service: Index (5) Piston Cup, Index (12) Cylinder Gasket, Index (18) U-Packing.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

## OPERATION:

Connect one of the three identical hoses to the air supply line and to the adapter on the four-way valve marked "IN." Connect the other two hoses to the two adapters on the four-way valve marked "CYL" (cylinder) and to the two adapters on the cylinder.

Heinrich air units can be used safely on air supply lines with pressures up to 150 psi.

Adjust jaw (7) to required opening by means of handle (15), like an ordinary bench vise, allowing minimum travel under air pressure to provide sufficient clearance to remove and insert workpiece.

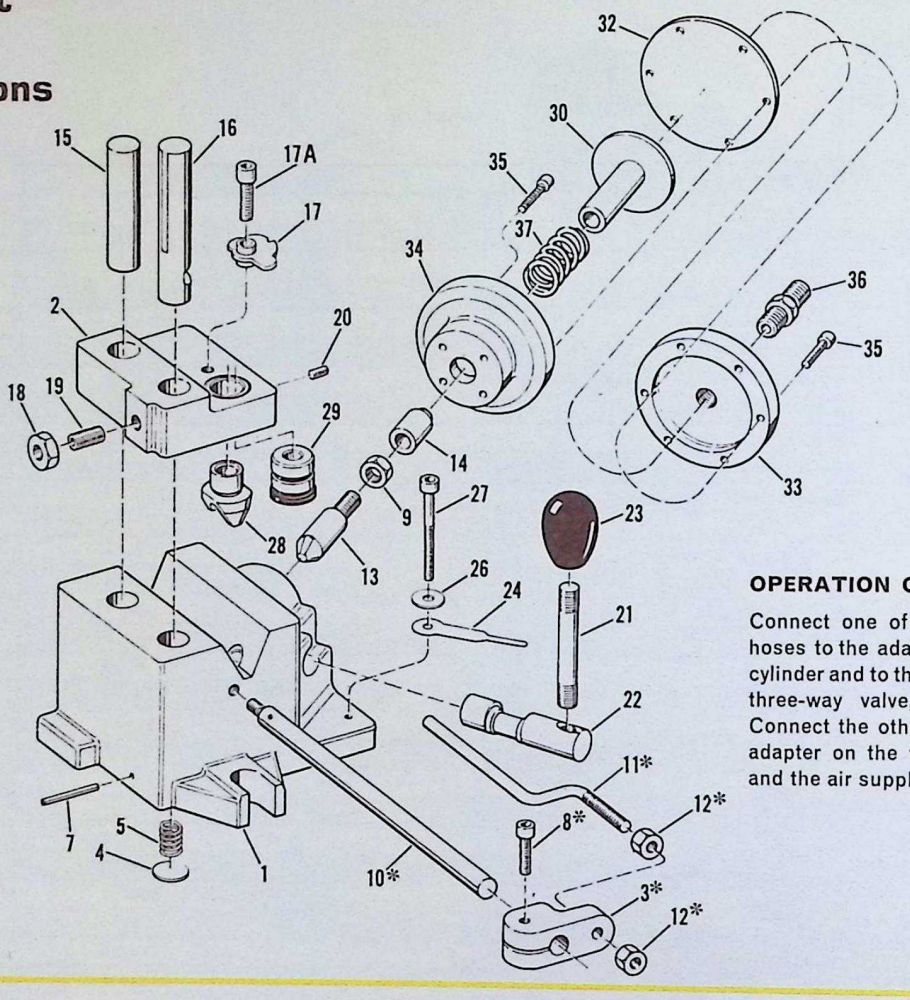
The range of holding power can be controlled by installing our No. R11-200-RLG Air Regulator between the air supply line and the four-way valve. While all operating parts are protected from oils, coolants, chips, etc., the air cylinder and controls could be damaged by foreign matter in the air line. This can be prevented by using our No. F11-200-M3T Air Filter, between the air supply and the air regulator and/or control valve. Our compact No. B11-221-M3L Combination Filter-Regulator may be used in place of the separate filter and regulator.

## MAINTENANCE:

An occasional oiling of the guide bars and adjusting screw is recommended. If the vise becomes inoperable, disassemble as shown in exploded view. Clean and check each part for wear or damage. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor. When reassembling, all screws and nuts should be evenly and securely tightened.

# ADJUSTABLE CROSS-HOLE DRILL JIGS

## Parts List and Instructions




**OPERATION OF AIR JIGS:**

Connect one of the two identical hoses to the adapter (36) on the air cylinder and to the side fitting on the three-way valve, marked "OUT." Connect the other hose to the end adapter on the valve marked "IN" and the air supply line.

**OPERATION:**

To provide proper clearance for inserting and removing the workpiece, follow these instructions:

1. Loosen nut(s) (18) and screw(s) (19) at the back of the clamping plate (2); raise clamping plate; and place the workpiece in the V-block.
2. Place set gage (24) between workpiece and adapter liner — (28) or (29).
3. Lower the clamping plate until the removable adapter liner (28) or (29) touches the set gage (24).
4. Secure the set screw(s) (19) and nut(s) (18) at the back of the clamping plate and remove set gage.
5. Attach the stop to the desired side and adjust to proper position.

Insert your drill bushing and adjust bushing clamp (17) with screw (17A) to keep bushing from turning. The drill jig is then ready for operation.

**MAINTENANCE:**

If jig becomes inoperable, disassemble as follows:

**HAND OPERATED UNITS:**

1. Loosen nut(s) (18) and screw(s) (19) and remove clamping plate (2) with guide pin (15) from the jig body (1).
2. Compress locking pin (16) fully into the body casting (1) with a vise.
3. Turn lock nut (9) onto the plunger (13) as far as it will go. Then crank (22) may be removed.
4. Remove plunger (13) and plunger cap (14). Locking pin (16) may then be removed with spring (5) and spring slug (4).

Re-assemble as per the exploded view. After insertion of the spring slug (4), and spring (5), insert locking pin (16) with flat facing back of body casting (1).

Compress locking pin (16) fully in vise. Insert plunger (13) with nut (9), plunger cap (14) and insert crank (22).

When assembled, lock nut (9) must have sufficient tension against plunger cap (14) so that the crank (22) has no free movement.

**AIR OPERATED UNITS:**

1. Loosen nut(s) (18) and screw(s) (19) and remove clamping plate (2) with guide pin (15) from the jig body (1).
2. Compress locking pin (16) fully into the body casting (1) with a vise.
3. Turn lock nut (9) onto the plunger (13) as far as it will go.
4. Remove six screws (35) from cylinder cover (33) and remove cover, diaphragm (32), piston assembly (30), spring (37), and plunger (13) and nut (9). Locking pin (16) may then be removed with spring (5) and spring slug (4).

Reassemble as per exploded view. After insertion of spring slug (4) and spring (5), insert locking pin (16) with flat facing back of body casting (1). Compress locking pin (16) fully in a vise. Insert

| Index No. | Part Name | MODEL NUMBER 305 and AR-305 Part No. | 305 and AR-305 Price | 605 and AR-605 Part No. | 605 and AR-605 Price | 905 and AR-905 Part No. | 905 and AR-905 Price |
|---|---|---|---|---|---|---|---|
| 1 | Body Casting (Note 1) | 305-1 | | 605-1 | | 905-1 | |
| 2 | Clamping Plate (Note 2) | 305-2 | $14.93 | 605-2 | $20.27 | 905-2 | $35.11 |
| 3* | Stop Clamp Casting | 305-3 | 6.63 | 305-3 | 6.63 | 305-3 | 6.63 |
| 4 | Spring Slug | 305-4 | .25 | 305-4 | .25 | 905-4 | .25 |
| 5 | Spring | 305-5 | 2.54 | 305-5 | 2.54 | 905-5 | 4.55 |
| 7 | 5/32 x 1 1/2 Rollpin | — | | — | | 905-7 | .25 |
| 7 | 5/32 x 1 1/8 Rollpin | 305-7 | .15 | 305-7 | .15 | — | |
| 8* | 1/4-20 x 7/8 Screw | 305-8 | .31 | 305-8 | .31 | 305-8 | .31 |
| 9 | 3/8-24 Nut | 305-9 | .25 | 305-9 | .25 | — | |
| 9 | 7/16-20 Nut | — | | — | | 905-9 | .25 |
| 10* | Stop Bar | 305-10 | 2.40 | 305-10 | 2.40 | 305-10 | 2.40 |
| 11* | Stop | 305-11 | 1.65 | 305-11 | 1.65 | 305-11 | 1.65 |
| 12* | 5/16-18 Nut (2 required) | 305-12 | .15 | 305-12 | .15 | 305-12 | .15 |
| 13 | Plunger Bolt | 305-13 | 6.15 | 605-13 | 6.15 | 905-13 | 9.74 |
| 14 | Plunger Cap (Hand Operated only) | 305-14 | 2.64 | 305-14 | 2.64 | 905-14 | 4.39 |
| 15 | Guide Pin | 305-15 | 1.75 | 605-15 | 2.49 | 905-15 | 4.00 |
| 16 | Locking Pin | 305-16 | 5.42 | 605-16 | 5.75 | 905-16 | 15.17 |
| 17 | Adjustable Bushing Clamp | 305-17 | 1.75 | 305-17 | 1.75 | 305-17 | 1.75 |
| 17A | 1/4-20 x 5/8 Screw | 305-17A | .31 | 305-17A | .31 | 305-17A | .31 |
| 18 | 3/8-24 Nut | 305-18 | .25 | 305-18 | .25 | 305-18 | .25 |
| 19 | 3/8-24 x 1 Screw | 305-19 | .41 | 305-19 | .41 | 305-19 | .41 |
| 20 | 1/4-28 x 3/8 Screw | 305-20 | .25 | 305-20 | .25 | — | |
| 20 | 5/16-24 x 1/2 Screw | — | | — | | 905-20 | .41 |
| 21 | Handle | GM-3415 | .64 | GM-3415 | .64 | 6815 | .73 |
| 22 | Crank | GM-3418 | 2.72 | GM-3418 | 2.72 | GM-6818 | 4.39 |
| 23 | Knob | OA-3421 | .75 | OA-3421 | .75 | SV-6821 | .73 |
| 24 | Set Gauge | 305-24 | .41 | 305-24 | .41 | 305-24 | .41 |
| 26 | 1/4 Flat Washer | 305-26 | .15 | 305-26 | .15 | 305-26 | .15 |
| 27 | 1/4-20 x 1 1/2 Screw | 305-27 | .41 | — | | — | |
| 27 | 1/4-20 x 2 1/2 Screw | — | | 605-27 | .61 | — | |
| 27 | 1/4-20 x 7 Screw | — | | — | | 905-27 | 1.12 |
| 28 | Adapter Liner, with V-Taper | 305-5/16 | 5.95 | — | | — | |
| 28 | Adapter Liner, with V-Taper | 305-1/2 | 5.95 | — | | — | |
| 29 | Adapter Liner | — | | 605-5/16 | 6.23 | 905-5/16 | 21.85 |
| 29 | Adapter Liner | — | | 605-1/2 | 6.23 | 905-1/2 | 21.85 |
| 29 | Adapter Liner | — | | 605-3/4 | 6.23 | 905-3/4 | 21.85 |
| 29 | Adapter Liner | — | | — | | 905-1 | 21.85 |
| 29 | Adapter Liner | — | | — | | 905-1 3/8 | 21.85 |
| * | Stop Rod Assembly | 305-22 | 13.57 | 305-22 | 13.57 | 305-22 | 13.57 |
| **AIR CYLINDER PARTS:** | | | | | | | |
| 30 | Piston Assembly | 305-30 | $5.75 | 305-30 | $5.75 | 905-30 | $11.48 |
| 32 | Diaphragm | 305-32 | 1.05 | 305-32 | 1.05 | 905-32 | 1.47 |
| 33 | Cylinder Cover | 305-33 | 5.98 | 305-33 | 5.98 | 905-33 | 16.76 |
| 34 | Cylinder Body | 305-34 | 8.80 | 305-34 | 8.80 | 905-34 | 30.33 |
| 35 | 10-32 x 5/8 Screw (10 req.) | 305-35 | .25 | 305-35 | .25 | — | |
| 35 | 1/4-20 x 7/8 Screw (10 req.) | — | | — | | 305-8 | .31 |
| 36 | Adapter | 33-16 | .88 | 33-16 | .88 | 33-16 | .88 |
| 37 | Spring | PA-417 | 1.20 | PA-417 | 1.20 | PA-6817 | .96 |

**Note 1.** Replacement body castings are not available.

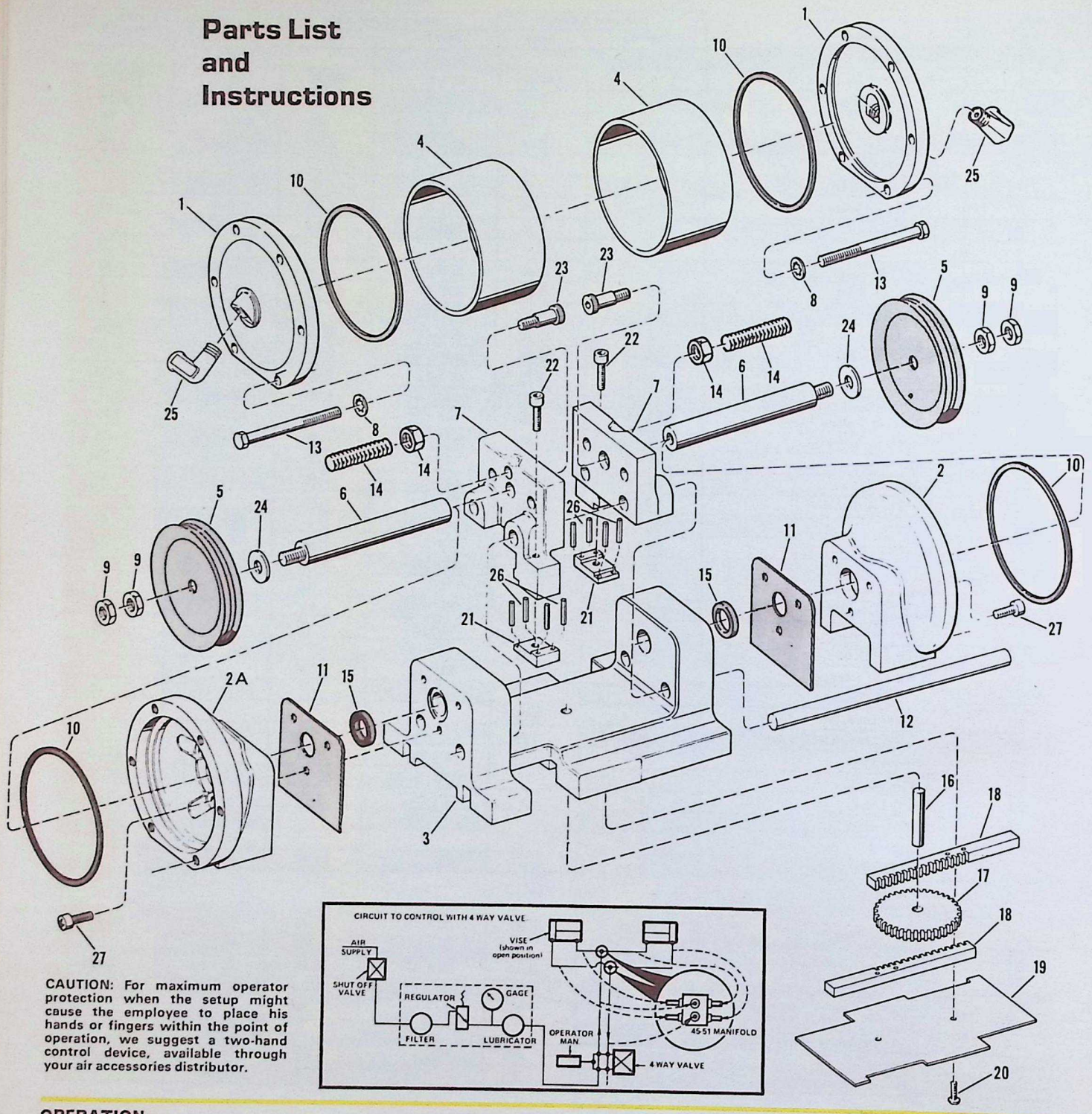
**Note 2.** Clamping plates are not interchangeable. If replacement is desired, the entire unit should be returned to the factory freight charges prepaid so that the new clamping plate can be properly fitted to your unit.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

plunger (13) with nut (9), spring (37), piston assembly (30), diaphragm (32), cylinder cover (33), and evenly and firmly tighten six screws (35). Lock nut (9) should be turned so that it lightly engages the piston rod (30).

When jig is disassembled, check each part for wear or damage. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor.

## Parts List and Instructions







**CAUTION:** For maximum operator protection when the setup might cause the employee to place his hands or fingers within the point of operation, we suggest a two-hand control device, available through your air accessories distributor.

**OPERATION:**

The two air outlets on the end of each cylinder must be connected through air hose or piping to the same outlet of a four-way valve, by means of a "T" or manifold. Likewise, the two air outlets on the vise body casting must be connected to the other outlet of the same four-way valve. See diagram above.

Heinrich Air Vises can be used safely on air supply lines with pressures up to 150 psi.

The range of holding power can be controlled by installing an air regulator between the air supply line and the four-way valve. To remove foreign matter in the air line, which could damage the air cylinder and controls, install an air filter between the air supply and the air regulator and/or control valve. See page 13 for accessories for Model DA-2200-SC. We do not furnish 3/8" air accessories for Models DA-6600-SC and DA-8800-SC. These are available from several air component manufacturers.

To set up vise for operation, follow these instructions:

1. SHUT OFF AIR PRESSURE.

| Index No. | Part Name | MODEL NUMBER DA-2200-SC No. Req. | DA-2200-SC Part No. | DA-2200-SC Price | DA-6600-SC No. Req. | DA-6600-SC Part No. | DA-6600-SC Price | DA-8800-SC No. Req. | DA-8800-SC Part No. | DA-8800-SC Price |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Cylinder Head | (2) | 3301-1 | $7.60 | (1)<br>(1) | 6601-1<br>6601-1R | $15.84 | (2) | 8800-1 | $42.27 |
| 2 | Cylinder Body | (2) | 3301-2 +2-A | 13.18 | | Part of Body Casting | | | Part of Body Casting | |
| 3 | Body Casting (Note 1) | (1) | 2200-3 | | (1) | 6600-3 | | (1) | 8800-3 | |
| 4 | Cylinder Tube | (2) | 2200-4 | 13.73 | (2) | 6600-4 | 20.27 | (2) | 8800-4 | 59.87 |
| 5 | Piston Cup | (2) | 3301-5<br>CB-28414 | 12.77 | (2) | 6601-5<br>CB-28500 | 18.76 | (2) | 8800-5<br>CB-28612 | 39.51 |
| 6 | Piston Rod | (2) | 2200-6 | 6.63 | (2) | 6600-6 | 7.19 | (2) | 8800-6 | 16.37 |
| 7 | Jaw Casting (Note 2) | (2) | 2200-7 | 17.16 | (2) | 6600-7 | 63.83 | (2) | 8800-7 | 188.78 |
| 8 | 5/16" I.D. Star Washer | (12) | 3301-9 | .15 | (12) | 3301-9 | .15 | (12) | 3301-9 | .15 |
| 9 | 1/2-20 x 1/4 Jam Nut | (4) | 3301-11 | .28 | | | | | | |
| 9 | 3/4-16 Jam Nut | | | | (4) | 6601-11 | .78 | (4) | 6601-11 | .78 |
| 10 | Cylinder Gasket | (4) | 3301-12 | 1.05 | (4) | 6601-12 | 1.60 | (4) | 8800-12 | 2.23 |
| 11 | Body Gasket | (2) | 3301-13 | .64 | | None Required | | | None Required | |
| 12 | Guide Bar | (2) | 44-14 | 2.31 | (2) | 6600-14 | 12.29 | (2) | 8800-14 | 52.66 |
| 13 | Cylinder Tie Rod | (12) | 2200-15<br>5/16-18 x 2 3/4 | .42 | (12) | 6600-15<br>5/16-18 x 6 | .91 | (12) | 8800-15<br>5/16-18 x 8 | 2.21 |
| 14 | Stop Bar | (2) | 2200-17<br>3/8-16 Threaded Rod<br>2 1/4" long with<br>3/8-16 Nut | .89 | (2) | 6600-17<br>1/2-13 Threaded Rod,<br>4" long, with<br>1/2-13 Nut | 4.20 | (2) | 8800-17<br>1/2-13 Threaded Rod,<br>5" Long, with<br>1/2-13 Nut | 4.26 |
| 15 | U-Packing | (2) | 3301-18<br>D-26-R-16 | 1.06 | (2) | 6601-18<br>D-26-R-20 | 1.60 | (2) | 8800-18<br>D-26-R-24 | 3.44 |
| 16 | Gear Pin | (1) | 2200-20<br>3/8 x 1 Dowel | .64 | (1) | 6600-20<br>5/8" x 1 1/2 Dowel | 2.23 | (1) | 77-20<br>5/8" x 2 Dowel | 2.35 |
| 17 | Gear | (1) | 2200-21 | 9.25 | (1) | 77-21<br>Boston YA-80 | 36.94 | (1) | 8800-21<br>Boston YA-120 | 54.54 |
| 18 | Rack | (2) | 2200-22 | 9.22 | (2) | 6600-22<br>Boston L-2020 x 10" | 10.87 | (2) | 8800-22<br>Boston L-2020 x<br>15 1/4 | 16.30 |
| 19 | Cover Plate | (1) | 2200-23 | 2.66 | (1) | 6600-23 | 26.35 | (1) | 8800-23 | 28.09 |
| 20 | 1/4-20 x 1/2 Screw | (2) | 2200-42 | .25 | (4) | 2200-42 | .25 | (4) | 2200-42 | .25 |
| 21 | Rack Locking Plate | (2) | 2200-44 | 6.15 | | None Required | | | None Required | |
| 22 | 5/16-18 x 1 3/4<br>Soc. Hd. Cap Screw | (2) | 2200-45 | .41 | | | | | | |
| 22 | 1/4-20 x 7/8<br>Soc. Hd. Cap Screw | | | | (2) | 305-8 | .31 | (2) | 305-8 | |
| 23 | Shoulder Screw | (2) | 3301-39 | 1.75 | (2) | 6601-39 | 4.39 | (2) | 6601-39 | .31 |
| 24 | Stat-O-Seal | (2) | 600-1/2" | .89 | (2) | 600-3/4" | 1.16 | (2) | 600-3/4" | 4.39 |
| 25 | 1/4" Street Elbow | (2) | 2200-33 | 1.61 | | None Required | | | None Required | 1.16 |
| 26 | Rack Rollpin | (8) | 4CL-6<br>1/8 x 7/8 | .25 | (4) | 2316-A<br>3/16 x 1 1/8 | .25 | (4) | 2316-A<br>3/16 x 1 1/8 | |
| 27 | 5/16 — 18 x 3/4 — Screw | (6) | 33-8 | .31 | | None Required | | | None Required | .25 |

**Note 1:** Price not shown, as replacement body castings are not available.

**Note 2:** If replacement of jaw casting (7) is necessary, it is recommended that the entire vise be returned to the factory, freight charges prepaid, for machining of the jaw, assembled in customer's vise.

Recommended spare parts to be retained in stock at all times to support each unit in service: Index (5) Piston Cup, Index (10) Cylinder Gasket, Index (11) Body Gasket, Index (15) U-Packing.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

2. Adjust and secure stop screws (or bars in the case of DA-2200-SC) (14) to limit jaw return, for desired jaw opening. Allow minimum clearance to insert and remove part piece. It is important to set stop screws (or bars) on each jaw with equal accuracy.

3. Place work in vise AS CLOSE AS POSSIBLE TO CENTER OF JAWS and apply air pressure. Regulate air pressure as required for the operation to be performed. AVOID EXCESSIVE AIR PRESSURE.

4. Move **entire** vise to center workpiece.

5. For maximum accuracy, securely clamp the vise to the work table, using the **center** side lugs.

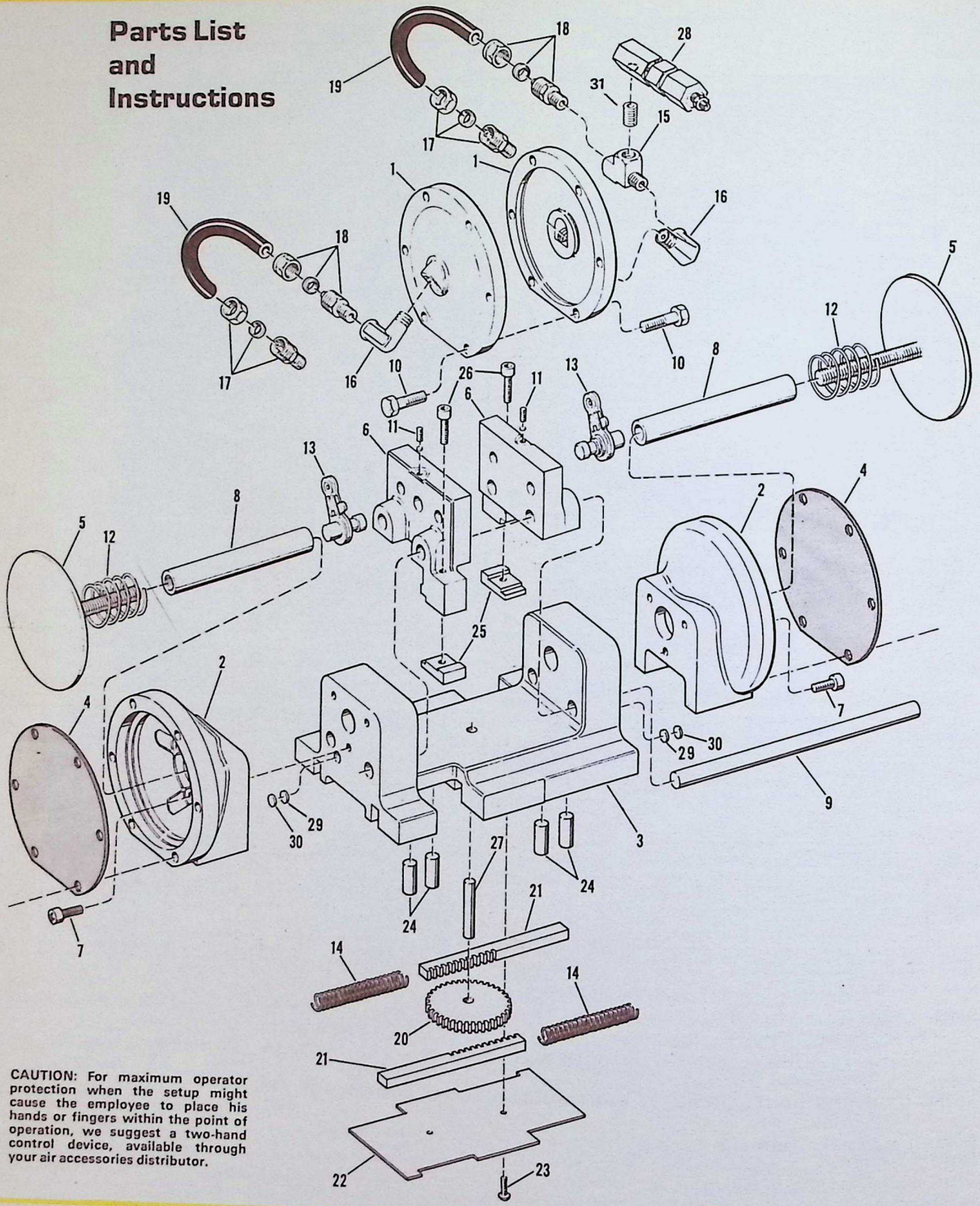
**MAINTENANCE:**

All operating parts, particularly the gear and rack mechanism in the base, should be kept free of foreign material. Periodic greasing of operating parts is recommended.

If vise becomes inoperable, disassemble as shown in exploded view. Clean and check each part for wear or damage. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor. When re-assembling, all screws and nuts should be evenly and securely tightened.

# SELF-CENTERING VISE

## Parts List and Instructions




**CAUTION:** For maximum operator protection when the setup might cause the employee to place his hands or fingers within the point of operation, we suggest a two-hand control device, available through your air accessories distributor.

**OPERATION:**

Connect one of the two identical hoses to the adapter on the vise and to the side fitting on the three-way valve, marked "OUT." Connect the other hose to the end adapter on the valve marked "IN" and to the air supply line.

Heinrich air units can be used safely on air supply lines with pressures up to 150 psi.

The range of holding power can be controlled by installing our No. R11-200-RLG Air Regulator, between the air supply line and the three-way valve. While all operating parts are protected from oils,

heinrich

| Index No. | MODEL 2200 Part Name | Part Number | Price |
|---|---|---|---|
| 1 | Cylinder Head (2 required) | 33-1 | $6.50 |
| 2 | Cylinder Body (2 required) | 33-2 | 9.97 |
| 3 | Body Casting (Note 1) | 2200-3 | |
| 4 | Diaphragm (2 required) | 33-4 | 2.72 |
| 5 | Piston Head, with Adjusting Screw (2 required) | 33-5 | 7.06 |
| 6 | Jaw Casting (2 required) — (Note 2) | 2200-7 | 17.16 |
| 7 | 5/16-18 x 3/4 Screw (6 required) | 33-8 | .31 |
| 8 | Center Bar Nut (2 required) | 33-13 | 3.50 |
| 9 | Guide Bar (2 required) | 44-14 | 2.31 |
| 10 | 5/16-18 x 7/8 Screw (12 required) | 33-17 | .31 |
| 11 | 1/4-28 x 5/8" Screw, with locking slug (2 required) | 33-18 | .31 |
| 12 | Cylinder Spring (2 required) | 33-24 | 1.65 |
| 13 | Ratchet Assembly (2 required) | 33-25 | 6.36 |
| 14 | Spring (2 required) | 2200-28 | 1.71 |
| 15 | Tee | 2200-32 | 5.52 |
| 16 | Elbow (2 required) | 2200-33 | 1.61 |
| 17 | 1/8" Fitting for Hose (2 required) | 2200-34 | 3.42 |
| 18 | 1/4" Fitting for Hose (2 required) | 2200-35 | 3.05 |
| 19 | Flexible Hose — 7" (2 required) | 2200-37 | 1.12 |
| 20 | Gear | 2200-21 | 9.25 |
| 21 | Rack (2 required) | 2200-40 | 9.22 |
| 22 | Cover Plate | 2200-23 | 2.66 |
| 23 | 1/4-20 x 1/2 Screws (2 required) | 2200-42 | .25 |
| 24 | Rack Stops (4 required) | 2200-43 | .48 |
| 25 | Rack Locking Plate (2 required) | 2200-44 | 6.15 |
| 26 | 5/16-18 x 1 3/4 Screw (2 required) | 2200-45 | .48 |
| 27 | Gear Pin | 2200-20 | .64 |
| 28 | Quick Exhaust Valve | 37 | 16.76 |
| 29 | Poppet (2 required) | 34-4 | .25 |
| 30 | Brass Slug (2 required) | 34-6 | .18 |
| 31 | 1/4" Close Nipple | 2200-36 | .73 |

**Note 1:** Price not shown, as replacement body castings are not available.

**Note 2:** Jaw castings are furnished with bar holes drilled and bored only. If complete jaw is required, vise must be returned to factory so that replacement jaw can be machined in assembly with the stationary jaw. Charge for special machining — $26.35

Recommended spare parts to be retained in stock at all times to support each unit in service: (Index (4) Diaphragm).

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

coolants, chips, etc., the air cylinders and controls could be damaged by foreign matter in the air supply line. This can be prevented by using our No. F11-200-M3T Air Filter, between the air supply and the air regulator and/or control valve. Our compact No. B11-221-M3L Combination Filter-Regulator may be used in place of the individual filter and regulator.

To set up vise for operation, follow these instructions:

1. SHUT OFF AIR PRESSURE.
2. Loosen two set screws (11) on top of each movable jaw (6) and two socket cap screws (26). Allow just a slight amount of tension on the ratchet plug; then the ratchets will move freely to adjust the jaws to the desired opening. Allow minimum clearance to insert and remove part piece.
3. **Tighten two set screws (11) and two socket cap screws (26).**
4. Place workpiece in vise AS CLOSE AS POSSIBLE TO CENTER OF JAWS: apply air pressure; move **entire vise** to center workpiece.
5. Clamp vise to the work table. For maximum accuracy, clamp the vise to the table, at the **center** of the vise.

**MAINTENANCE:**

All operating parts, particularly the gear and rack mechanism in the base should be kept free of foreign matter. Periodic greasing of operating parts is recommended.

Disassemble each air cylinder as follows: First, shut off the air supply; clamp the movable jaws tightly together with a C-Clamp (and do not remove until the cylinder head is securely replaced); then remove the six screws and cylinder head (1). Care should be taken in removal of the piston head with adjusting screw (5) because of the tension on the cylinder spring (12).

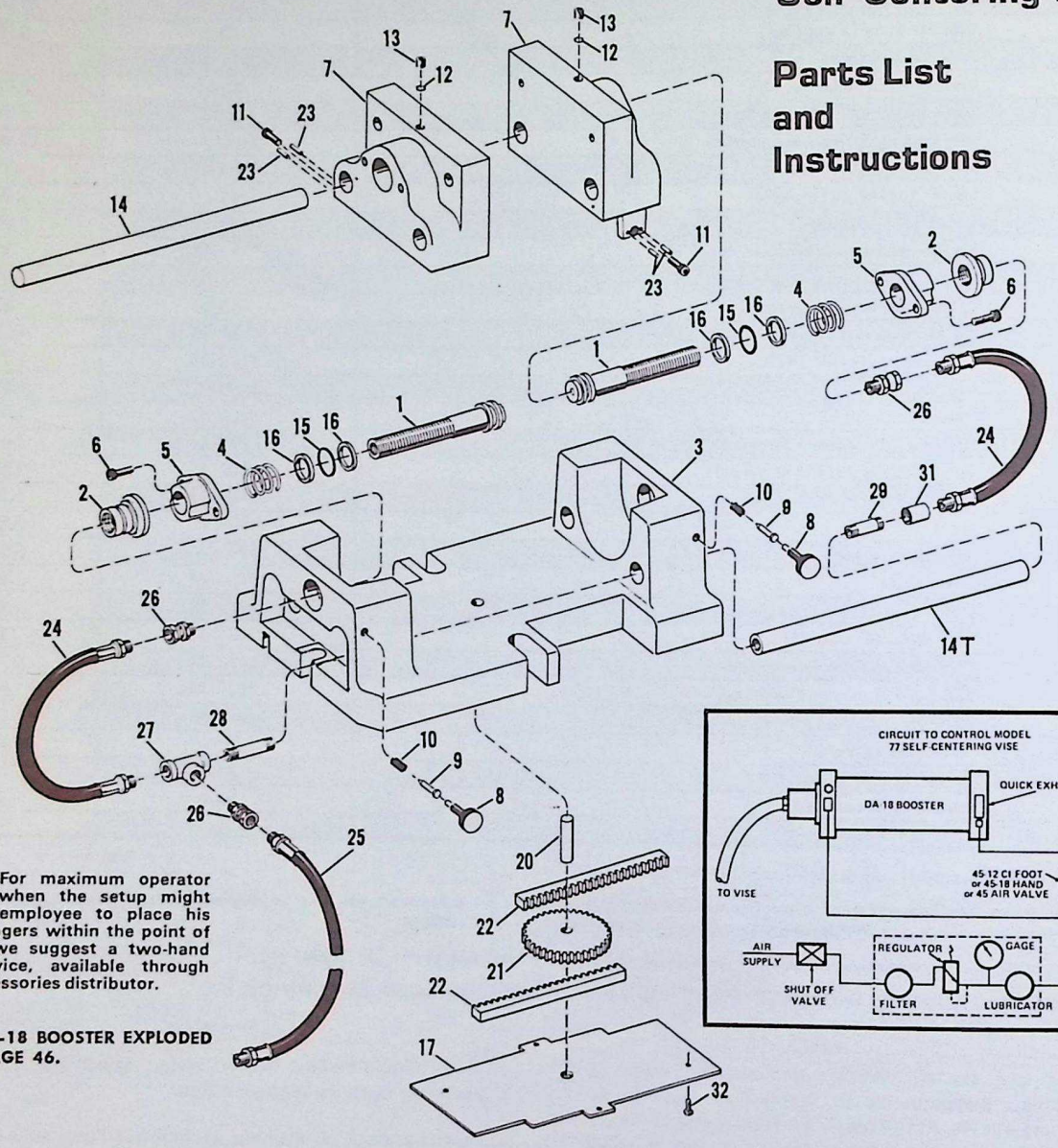
To remove ratchet (13) from the center bar nut (8), remove piston head with adjusting screw (5), insert 3/8" dia. x 2" long pin in center bar nut (8). Thread piston (5) into center bar nut (8) until ratchet is forced off from its press fit in the center bar nut. To remove ratchet (13) from jaw (6), remove set screw (11) from jaw (6), and tap or drill out slug (11).

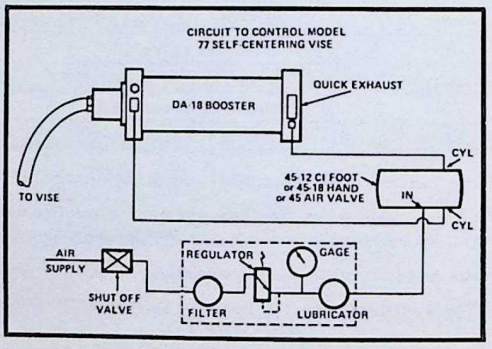
Clean and check each part for wear or damage. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor.

After replacing diaphragm and cylinder head, screws should be evenly and firmly tightened.

## Model 77 Air-Hydraulic Self-Centering Vise . . .

## Parts List and Instructions




**CAUTION:** For maximum operator protection when the setup might cause the employee to place his hands or fingers within the point of operation, we suggest a two-hand control device, available through your air accessories distributor.

**SEE NO. DA-18 BOOSTER EXPLODED VIEW ON PAGE 46.**

### OPERATION:

Connect two of the three identical hoses to the two adapters on the booster and to the two adapters on the four-way valve, marked "CYL". Connect the other hose to the adapter on the valve marked "IN" and to the air supply line. See diagram above. The Model 77 vise can be used safely on air supply lines with pressures up to 150 psi. The range of holding power can be controlled by installing our No. R11-200-RLG Air Regulator between the supply line and the four-way valve. While all opening parts are protected from oils, coolants, chips, etc., the cylinders and controls could be damaged by foreign matter in the air supply line. This can be prevented by using our No. F11-200-M3T Air Filter, between the air supply and the air regulator and/or control valve. Our compact No. B11-221-M3L Combination Filter-Regulator may be used in place of the individual filter and regulator.

To insure accuracy, it is important that these instructions be followed closely when setting up the vise for operation:

1. SHUT OFF THE AIR PRESSURE.
2. Loosen both thumb screws (8) counter-clockwise, approximately three turns to unlock knurled adjusting nuts (2).
3. Turn adjusting nuts (2) clockwise on piston (1), toward the jaws (7).
4. Move jaws (7) by hand to desired opening, allowing minimum clearance to remove and insert part piece.
5. Leaving jaws in this position, adjust one nut (2) back to main body casting, and turn corresponding thumb screw (8) until locking pin (10) engages the "V" in the adjusting nut (2), and tighten securely by hand. DO NOT USE PLIERS OR WRENCH.
6. Repeat No. 5 with opposite end.
7. Insert part piece AS CLOSE AS POSSIBLE TO CENTER OF JAWS; apply air pressure; move **entire** vise into position for operation.
8. Clamp vise to work table, using side mounting lugs at **center** of vise.

MODEL 77

| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Piston (2 required) | 77-1 | $53.14 |
| 2 | Adjusting Nut (2 required) | 77-2 | 53.43 |
| 3 | Body Casting (Note 1) | 77-3 | |
| 4 | Return Spring (2 required) | 77-4 | 6.36 |
| 5 | Spring Cover Casting (2 required) | 77-5 | 21.07 |
| 6 | 5/16-18 x 1 Screw (4 required) | 77-6 | .41 |
| 7 | Jaw Casting (2 required) — (Note 2) | 77-7 | 99.86 |
| 8 | Thumb Screw (2 required) | 77-8 | 24.87 |
| 9 | Locking Pin (2 required) | 77-9 | 9.08 |
| 10 | Locking Pin Spring (2 required) | 77-10 | 1.54 |
| 11 | 1/4-20 x 7/8 Screw (2 required) | 305-8 | .31 |
| 12 | O-Ring #6227-03 — for Bleeder (2 required) | 77-12 | .48 |
| 13 | 3/8-24 x 3/8 Screw (2 required) | 77-13 | .31 |
| 14 | Guide Bar | 77-14 | 31.92 |
| 14T | Guide Bar | 77-14T | 43.89 |
| 15 | O-Ring #6227-22 — for Piston (2 required) | 77-15 | .64 |
| 16 | Back-Up Washer #6246-22 — for Piston (4 required) | 77-16 | .48 |
| 17 | Equalizing Gear Cover | 77-17 | 32.43 |
| 18 | Air-Hydraulic Booster | DA-18 | 387.92 |
| 20 | 5/8 x 2 Dowel | 77-20 | 2.35 |
| 21 | Equalizing Gear — YA-80 | 77-21 | 36.94 |
| 22 | Equalizing Gear Rack (L-2020) (2 required) | 77-22 | 11.24 |
| 23 | 3/16 x 1 1/8 Rollpin | 2316-A | .15 |
| 24 | Hose Assembly — 4F-4MB-14" (2 required) | 77-24 | 20.55 |
| 25 | Hose Assembly — 4F-4MB-60" | 77-25 | 44..81 |
| 26 | Adaptor — 4M-4UFS (3 required) | 77-26 | 2.02 |
| 27 | Female "T" 1/4" Steel 6000# | 77-27 | 11.88 |
| 28 | Pipe Nipple — 1/4 x 2 1/2 | 77-28 | 2.59 |
| 29 | Pipe Nipple — 1/4 x 1 1/2 | 77-29 | 1.29 |
| 31 | 1/4" Coupling | 77-31 | 4.97 |
| 32 | 1/4-20 x 1/2 Screw (4 required) | 30 1/2 | .25 |

Note 1: Price not shown, as replacement body castings are not available.

Note 2: If replacement jaw casting is required, the entire vise must be returned to the factory, freight charges prepaid, so that the replacement jaw can be machined, assembled in the customer's vise.

Recommended spare parts to be retained in stock at all times to support each unit in service: REPAIR KIT FOR MODEL 77 VISE, consisting of (2) #77-12 (6227-03) O-Rings for Bleeder; (2) #77-15 (6227-22) O-Rings for Piston; (4) #77-16 (6246-22) Back-Up Washers for Piston — Price for Kit — $4.16.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

## MODEL 77 INSTRUCTIONS

### MAINTENANCE:

Never use air hose to clean vise, as chips can be blown into vise jaw guide bar holes. Although the centering mechanism is guarded to prevent chips from entering, air pressure can force them into the gear and rack.

If, after continued use, there is a noticeable reduction in the 11/16" length of stroke in each jaw, or there is a loss of holding pressure, this is probably an indication that oil has escaped from the hydraulic system.

1. The oil sight level in the booster should be checked. Oil must be visible in glass. To add oil, remove breather (27) and fill reservoir with a good grade of light hydraulic oil.

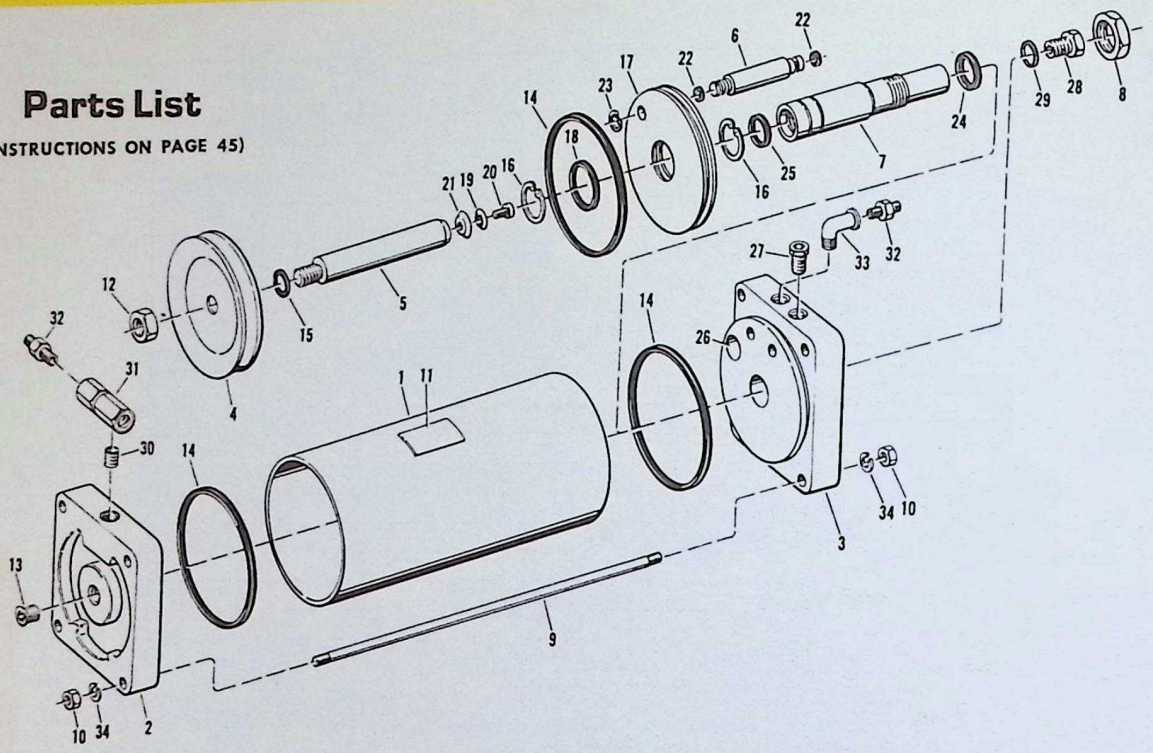
2. Loosen, but do not remove 3/8 socket head screws (13) in each jaw; place part piece in vise, apply air pressure and activate jaws until air bubbles no longer appear at screws (13) in jaws.

3. Tighten two screws (13). Using pressure, check to be sure length of stroke for each jaw is 11/16". If 11/16" stroke is not obtained, repeat above instructions.

Disassemble booster to service O-rings and parts other than cup seal. (21). To replace cup seal only (21) booster must remain assembled. Advance piston to the forward position leaving air pressure on. Bleed oil from the line. Disconnect and remove adapter bushing (28), cap screw (20), and washer (19). Cup seal can be removed with a sharp hooked tool. Reverse this procedure to install new cup seal. When re-installing booster, remove breather (27) to fill oil reservoir with one pint of hydraulic fluid. All air must be bled from high pressure oil line and unit to be operated. See above instructions. 2 and 3. The booster will automatically replenish lost oil from the reservoir.

## Parts List

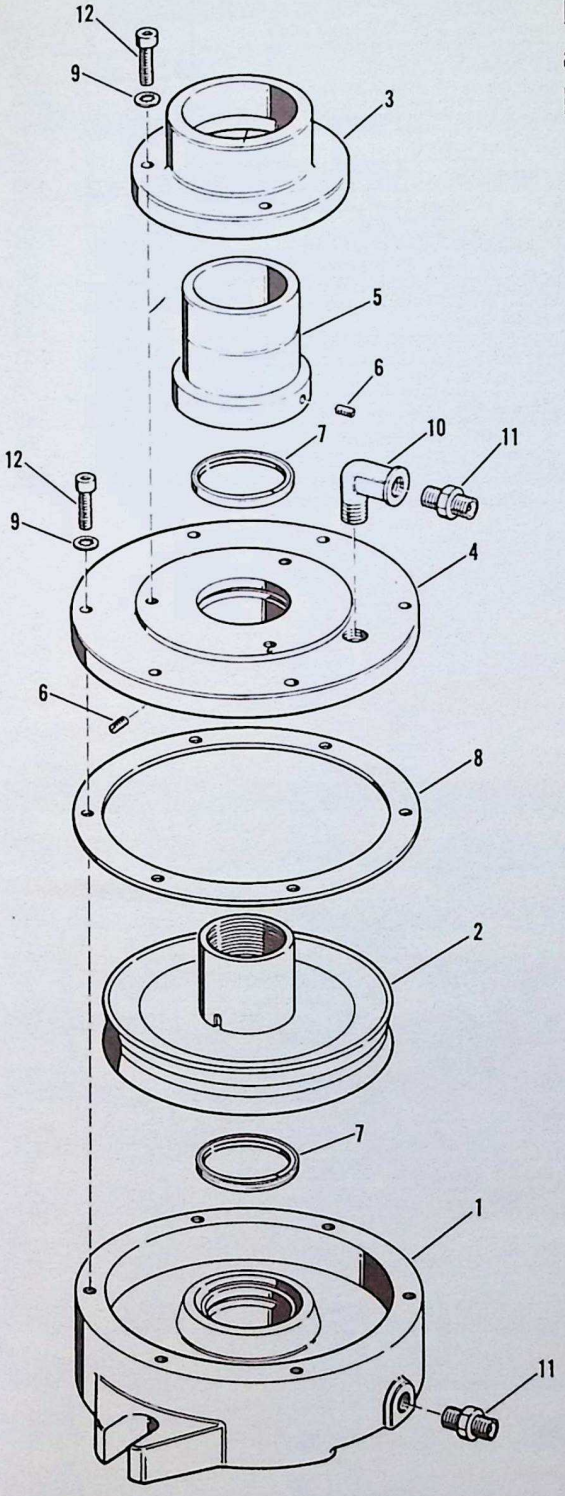
(INSTRUCTIONS ON PAGE 45)




| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Cylinder, Air | DA18-1 | $52.58 |
| 2 | End Cap, Air | DA18-2 | 63.71 |
| 3 | End Cap, Oil | DA18-3 | 70.10 |
| 4 | Piston, Air | DA18-4 | 36.96 |
| 5 | Piston, Oil | DA18-5 | 29.49 |
| 6 | Spacer, Air Conduit | DA18-6 | 13.40 |
| 7 | Cylinder, Oil | DA18-7 | 54.18 |
| 8 | Lock Nut — 1⅝-12 | DA18-8 | 3.83 |
| 9 | Tie Rod (4 required) | DA18-9 | 7.54 |
| 10 | Jam Nut — ⅜-16 | DA18-10 | .31 |
| 11 | Nameplate | DA18-11 | |
| 12 | Jam Nut — ¾-16 | DA18-12 | .66 |
| 13 | Pipe Plug — ¼ NPT | DA18-13 | .66 |
| 14 | O-Ring — 4¾ x 5 x ⅛ | DA18-14 | 2.40 |
| 15 | O-Ring — 9/16 x ¾ x 3/32 | DA18-15 | .66 |
| 16 | Lock Ring — 5107-175 | DA18-16 | 1.60 |
| 17 | Plate, Reservoir | DA18-17 | 33.46 |
| 18 | O-Ring — 1¾ x 2 x ⅛ | DA18-18 | .81 |
| 19 | Washer, Clamp | DA18-19 | 5.09 |
| 20 | Socket Head Cap Screw | DA18-20 | .31 |
| 21 | Piston Cup Seal | DA18-21 | 14.36 |
| 22 | O-Ring — ⅜ x ½ x 1/16 | DA18-22 | .66 |
| 23 | Lock Ring — 5133-50 | DA18-23 | .52 |
| 24 | O-Ring — 1⅜ x 1⅝ x ⅛ | DA18-24 | .81 |
| 25 | O-Ring — ⅞ x 1⅛ x ⅛ | DA18-25 | .66 |
| 26 | Window Oil Level | DA18-26 | 8.61 |
| 27 | Plug, Oil Breather | DA18-27 | 4.31 |
| 28 | Adapter Bushing | DA18-28 | 9.58 |
| 29 | O-Ring — 15/16 x 1⅛ x 3/32 | DA18-29 | .80 |
| 30 | ¼" Close Nipple | 2200-36 | .73 |
| 31 | Quick Exhaust Valve | 37 | 16.76 |
| 32 | Adapter | 33-16 | .88 |
| 33 | Street Elbow — ¼" | 2200-33 | 1.61 |
| 34 | Lock Washer | DA18-34 | .25 |



**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**




## Parts List and Instructions

| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Base Casting | 1AC-1 | $28.57 |
| 2 | Piston Cup, with Draw Bar | 1AC-2 | 48.28 |
| 3 | Thrust Plate Casting | 1AC-3 | 9.25 |
| 4 | Cylinder Cover Casting | 1AC-4 | 25.47 |
| 5 | Adapter | 1AC-5 | 45.65 |
| 6 | 10-32 x 5/16 Screw (2 required) | 1AC-6 | .61 |
| 7 | G.T. Ring 6072 (2 required) | 1AC-7 | 3.92 |
| 8 | Gasket | 1AC-8 | 2.00 |
| 9 | 1/4 I.D. Internal Tooth Lock Washer (9 required) | 1AC-9 | .15 |
| 10 | Street Elbow | 2200-33 | 1.61 |
| 11 | Adapters (2 required) | 33-16 | .88 |
| 12 | 1/4-20 x 7/8 Screw (9 required) | 305-8 | .31 |

Recommended spare parts to be retained in stock at all times to support each unit in service: Index (7) G.T. Ring (6072).

**OPERATION:**

Connect one of the three identical hoses to the air supply line and to the adapter on the four-way valve marked "IN." Connect the other two hoses to the two adapters on the four-way valve marked "CYL" (cylinder) and to the two adapters on the collet fixture. To install 5-C collets, follow these instructions:

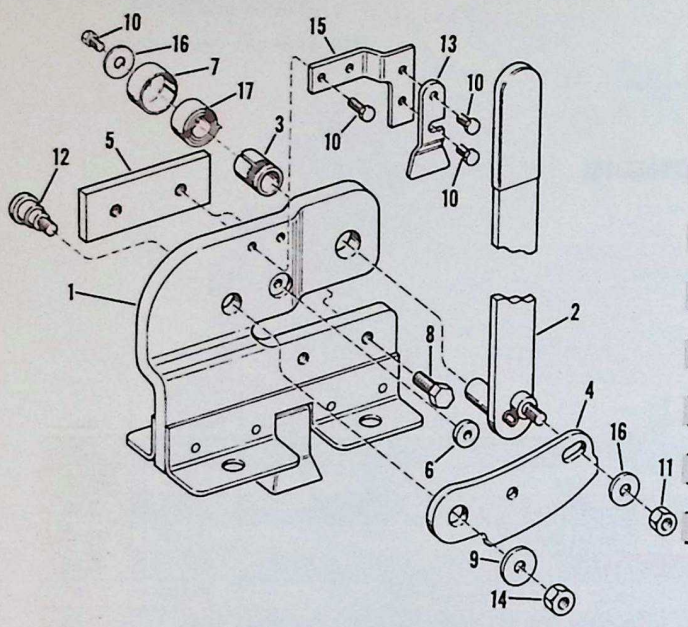
1. Loosen three (3) 1/4-20 socket head cap screws (12) on the painted thrust plate (3).
2. Place 5-C style collet in knurled adapter (5). Make sure keyway on outside of collet aligns with key in adapter (5).
3. Turn adapter (5) clockwise to close collet — counter-clockwise to loosen. Adjust adapter (5) so collet has clearance for insertion of stock.
4. Tighten three (3) socket head cap screws (12) on thrust plate (3).
5. Center **entire** chuck for alignment before clamping to work table.

**MAINTENANCE:**

Disassemble as per exploded view. Clean and check each part for wear or damage. Replacement parts are available for immediate shipment from factory stock, or you may order through your local Heinrich distributor.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

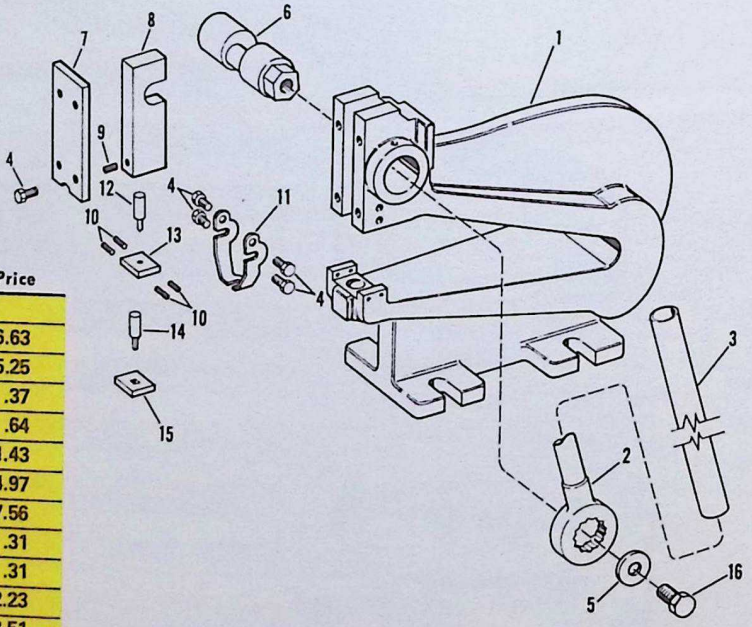
## NO. 1 PORTABLE SHEAR




| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Frame, including right and left hand angles and latch casting (Note 1) | H-1 | |
| 2 | Handle Lever, with (2) riveted studs | H-4 | $18.51 |
| 3 | Bushing for Handle Hole | H-7 | 4.39 |
| 4 | Upper Blade — carbon steel | H-8 | 27.70 |
| 5 | Lower Blade — carbon steel | H-9 | 10.54 |
| 6 | Rod Cutter Bushing | H-10 | 1.35 |
| 7 | Spring Housing | H-11 | 1.75 |
| 8 | 7/16-14 x 7/8 Screw (2 required) | H-12 | .31 |
| 9 | 1 1/2 x 1/2 Washer | H-34 | .64 |
| 10 | 5/16-24 x 1/2 Screw (5 required) | H-14 | .37 |
| 11 | 3/8-24 Hex Nut | H-15 | .25 |
| 12 | Shoulder Stud | H-16 | 1.99 |
| 13 | Holddown | H-17 | 2.23 |
| 14 | 1/2-20 Hex Nut | H-18 | .25 |
| 15 | Holddown Bracket | H-19 | 2.23 |
| 16 | 1 1/4 x 3/8 Washer (2 required) | H-20 | .64 |
| 17 | Spring | H-21 | 2.88 |

**Note 1.** Frame not available.

## NO. 6 DEEP THROAT BENCH PUNCH




| Index No. | Part Name | Part No. | Price | |
|---|---|---|---|---|
| 1 | Frame Casting (Note 1) | H-65 | | |
| 2 | Handle Casting | H-30 | $6.63 | |
| 3 | Handle Lever | H-36 | 5.25 | |
| 4 | 5/16-24 x 1/2 Screw (8 required) | H-14 | .37 | |
| 5 | 1 1/2 x 1/2 Washer | H-34 | .64 | |
| 6 | Crank, Punching | H-52 | 11.43 | |
| 7 | Cover Plate | H-53 | 4.97 | |
| 8 | Punch Holder | H-55 | 17.56 | |
| 9 | 3/8-16 x 1/2 Screw | H-56 | .31 | |
| 10 | 1/4-20 x 1/2 Screw (4 required) | H-57 | .31 | |
| 11 | Holddown (Stripper) for Punch | H-68 | 2.23 | |
| 12 | Punch, 1/16" to 1/2" x 64ths — Round | H-71 | 3.51 | $7.75 Per Set |
| 13 | Die, 1/16" to 1/2" x 64ths — Round | H-72 | 4.24 | |
| 14 | Punch, 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2" — Square | H-71SQ | 16.76 | $35.12 Per Set |
| 15 | Die, 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2" — Square | H-72SQ | 18.36 | |
| 16 | 7/16-14 x 3/4 Screw | H-44 | .25 | |

**Note 1.** Frame Castings are not available.

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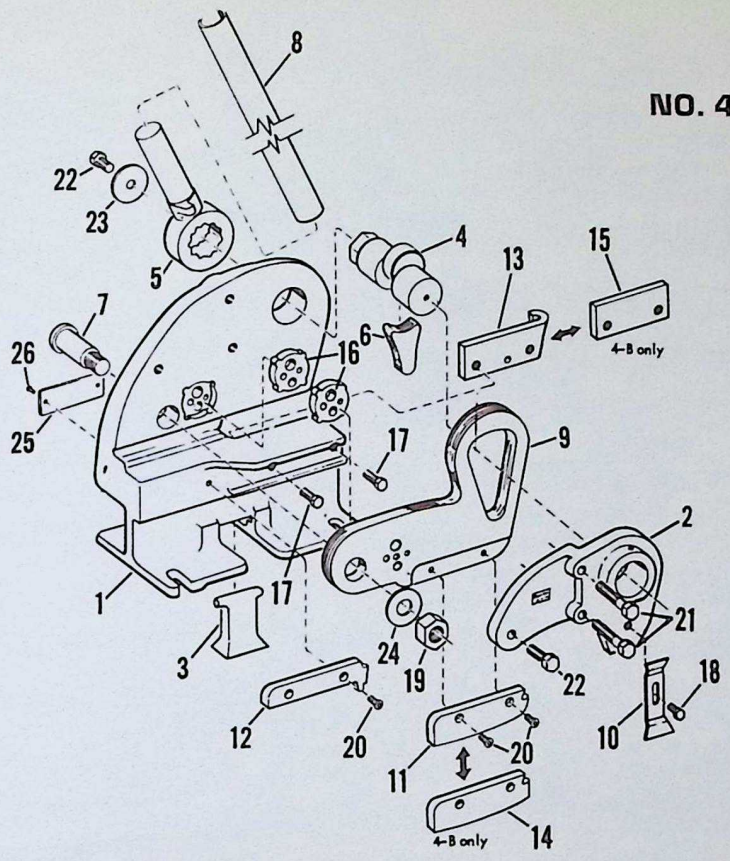
## NO. 4 HANDNIB

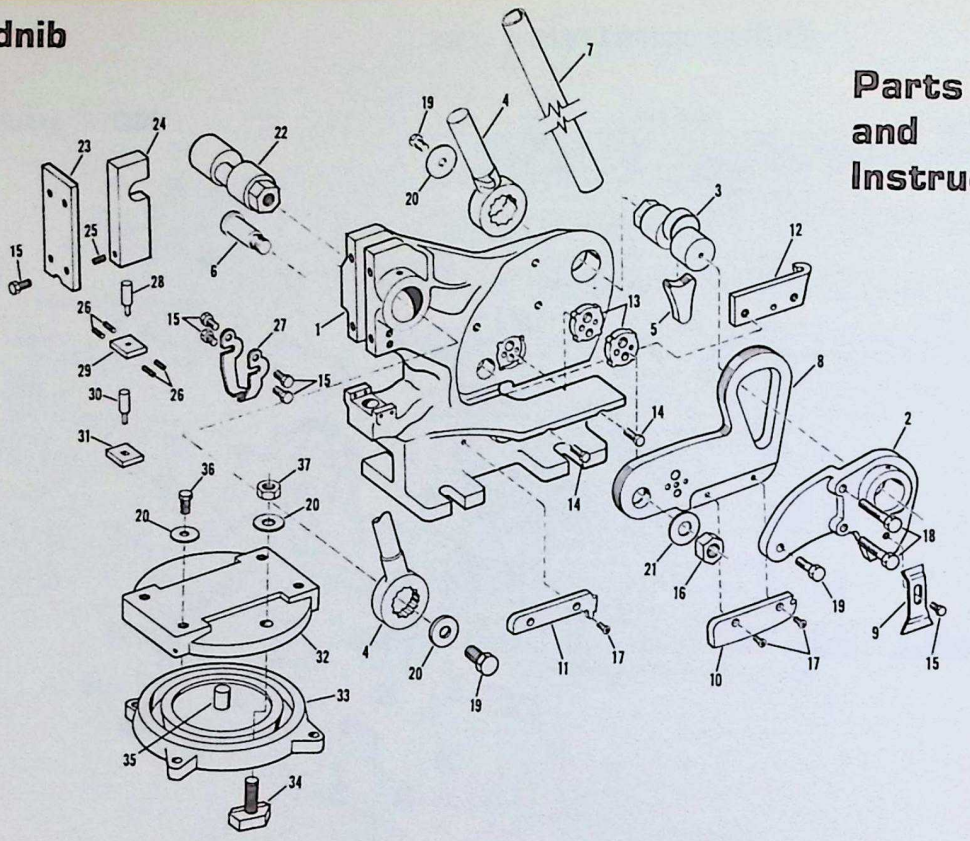



| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Frame Casting (Note 1) | H-27 | |
| 2 | Cover Casting | H-28 | $11.43 |
| 3 | Latch Casting | H-22 | 4.16 |
| 4 | Crank | H-29 | 24.82 |
| 5 | Handle Casting | H-30 | 6.63 |
| 6 | Rocker Arm Assembly | H-31 | 4.39 |
| 7 | Shoulder Stud | H-33 | 7.74 |
| 8 | Handle Lever | H-36 | 5.25 |
| 9 | Blade Holder Assembly | H-37 | 35.11 |
| 10 | Holddown | H-45 | 1.35 |
| 11 | Upper Outside Nibbling Blade — 4A Only | H-47 | 15.57 |
| 12 | Upper Inside Nibbling Blade — 4A Only | H-48 | 15.57 |
| 13 | Lower Nibbling Blade — 4A Only | H-49 | 28.09 |
| 14 | Upper Straight Shearing Blade, Carbon Steel — 4B | H-50 | 10.54 |
| 15 | Lower Straight Shearing Blade, Carbon Steel — 4B | H-51 | 10.54 |
| 16 | Rod Cutting Die (2 required) | H-54 | 3.12 |
| 17 | 7/16-14 x 7/8 Screw (2 required) | H-12 | .31 |
| 18 | 5/16-24 x 1/2 Screw | H-14 | .37 |
| 19 | 3/4-16 Nut | H-41 | .75 |
| 20 | 1/4-28 x 1/2 Screw (3 required) | H-42 | .64 |
| 21 | 7/16-14 x 1 1/2 Screw (2 required) | H-43 | .52 |
| 22 | 7/16-14 x 3/4 Screw (2 required) | H-44 | .25 |
| 23 | 1 1/2 x 1/2 Washer | H-34 | .64 |
| 24 | 1 1/2 x 3/4 Washer | H-35 | .64 |
| 25 | Latch Casting Stop Plate | H-40 | 1.20 |
| 26 | Stop Plate Pin (2 required) | H-80 | .25 |

Note 1. Frame Castings are not available.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

## No. 5A Handnib



**Parts List and Instructions**

### OPERATION AND MAINTENANCE INSTRUCTIONS FOR HEINRICH METALWORKING TOOLS.

Caution: Stock harder than Rockwell "B" 90/100 or Brinnell 190/220 should not be cut with the standard blades furnished. (Blades are water hardening tool steel, hardened to RC 58/60.)

**DO NOT USE BEYOND RECOMMENDED CAPACITIES.** (See pages 16 and 17.) Forcing the unit to cut stock heavier than rated capacity may distort the steel frame casting or damage the blades beyond the point of repair.

**INSTALLATION OF BLADES:**

Before attempting to shear or nibble, be sure that the blades are properly engaged. There should be a minimum of clearance between the upper and lower blades, just sufficient to allow the upper blade to pass the lower blade. Blades are properly adjusted and "paper-cut tested" at the factory on all new units. Should it be necessary to re-install blades, after sharpening, to replace upper outside nibbling blade with the inside nibbling blade, or to replace worn out blades, the blades should be installed in this manner:

1. Remove both upper and lower blades from the unit.
2. Place the operating handle in the closed position.
3. Securely attach the desired upper blade to the blade holder, making sure that the mounting surface on the blade holder is clean.
4. Place the lower blade into position against the milled surface of the frame casting, making sure again that the surface is clean. In the case of nibbling blades, the convex radius on the upper blade must engage the concave radius on the lower blade, with a minimum of clearance to allow movement.
5. Securely tighten all screws. When tightening screws on the lower nibbling blade, make sure that the lower blade does not move out of the engagement with the upper blade.
6. Should the blades fail to meet properly after tightening all screws securely, it may be necessary to place a paper shim of required thickness behind the lower blade to provide the proper minimum clearance.

**IMPORTANT — USE OF HOLDDOWN:** Before shearing or nibbling, the holddown on the left side of the unit must be adjusted so that the bottom edge comes to within about 1/32" of the stock to be cut, when the stock is in a horizontal position. If the holddown is not properly adjusted before shearing or nibbling, the stock could wedge between the blades, causing possible damage to the frame casting and the blades.

**SHEARING:**

The frames of all units are so constructed as to allow shearing of wide sheets. The part of the stock passing on the right side of the unit will become distorted because of the "shearing" action. Therefore, the part of the stock to be used should be on the left side of the shear. Shearing can most easily be done in short strokes, with the stock placed as far as possible to the back of the blades. For maximum effect of leverage, the handle should be gripped as near to the end as is comfortable or convenient. Do not attempt to use a handle longer than the 29" handle furnished with the unit.

**NIBBLING:**

Nibble bits of stock no deeper than 5/16", making sure that the stock does not extend beyond the "hook" of the lower blade. Nibble from right to left. Before attempting to use the inside nibbling blade, it is necessary to provide "heel" clearance in the stock by either punching or drilling a 1/4" (approx.) hole.

## MODEL 5A

| Index No. | Part Name | Part No. | Price |
|---|---|---|---|
| 1 | Frame Casting (Note 1) | H-46 | |
| 2 | Cover Casting | H-28 | $11.43 |
| 3 | Crank, Nibbling | H-29 | 24.82 |
| 4 | Handle Casting (2 required) | H-30 | 6.63 |
| 5 | Rocker Arm Assembly | H-31 | 4.39 |
| 6 | Shoulder Stud | H-33 | 7.74 |
| 7 | Handle Lever | H-36 | 5.25 |
| 8 | Blade Holder Assembly | H-37 | 35.11 |
| 9 | Holddown | H-45 | 1.35 |
| 10 | Upper Outside Nibbling Blade | H-47 | 15.57 |
| 11 | Upper Inside Nibbling Blade | H-48 | 15.57 |
| 12 | Lower Nibbling Blade | H-49 | 28.09 |
| 13 | Rod Cutting Die (2 required) | H-54 | 3.12 |
| 14 | 7/16-14 x 7/8 Screw (2 required) | H-12 | .31 |
| 15 | 5/16-24 x 1/2 Screw (9 required) | H-14 | .37 |
| 16 | 3/4-16 Nut | H-41 | .75 |
| 17 | 1/4-28 x 1/2 Screw (3 required) | H-42 | .64 |
| 18 | 7/16-14 x 1 1/2 Screw (2 required) | H-43 | .52 |
| 19 | 7/16-14 x 3/4 Screw (3 required) | H-44 | .25 |
| 20 | 1 1/2 x 1/2 Washer (7 required) | H-34 | .64 |
| 21 | 1 1/2 x 3/4 Washer | H-35 | .64 |
| 22 | Crank, Punching | H-52 | 11.43 |
| 23 | Cover Plate | H-53 | 4.97 |
| 24 | Punch Holder | H-55 | 17.56 |
| 25 | 3/8-16 x 1/2 Screw | H-56 | .31 |
| 26 | 1/4-20 x 1/2 Screw (4 required) | H-57 | .31 |
| 27 | Holddown (Stripper) for Punch | H-68 | 2.23 |
| 28 | Punch, 1/16" to 1/2" x 64ths — Round | H-71 | 3.51 |
| 29 | Die, 1/16" to 1/2" x 64ths — Round | H-72 | 4.24 |
| 30 | Punch, 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2" — Square | H-71SQ | 16.76 |
| 31 | Die, 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2" — Square | H-72SQ | 18.36 |
| 32 | Swivel Base Casting (top) | H-59 | 40.87 |
| 33 | Swivel Base Casting (bottom) | H-60 | 48.36 |
| 34 | Bolt Forging | H-61 | 1.20 |
| 35 | Pivot Stud | H-62 | .88 |
| 36 | 7/16-14 x 1 Screw (4 required) | H-63 | .31 |
| 37 | 1/2-13 Nut | H-76 | .41 |

**Note 1.** Frame Castings are not available.

**WHEN ORDERING PARTS, INDICATE PART NUMBER, MODEL NUMBER AND PRICE.**

### ROD CUTTING:

Round stock in sizes 3/16", 1/4", 5/16" and 3/8" may be cut, using the appropriate hole size, which is stamped on the surface of the rod cutting die holder. The holes of the rod cutting die, inserted in the frame casting, should coincide with the holes of the die in the movable die holder, when the operating handle is in the full open position. Should the operator attempt to cut rods smaller than the hole, there will be a greater distortion of the stock. Stock should be inserted from the left side of the unit, and the stock should extend at least 1/4" beyond the cutting edges of the dies before cutting. Use a complete, quick, stroke when cutting rods. Rod cutting dies are press-fit into the movable die holder and the frame casting. They can be removed for replacement by knocking out, using a 3/16" steel pin in the knock-out hole provided for this purpose. Replace both dies, making sure to properly match the holes. Dies may be tapped into position with a hammer, using a soft object to protect the die edges. Before installing dies, make sure the mounting surfaces are clean.

### PUNCHING:

To install punch and die, follow these instructions. Insert punch fully into punch holder so that the flat on the punch is aligned with the set screw in the punch holder. Secure the set screw against the flat of the punch. Place die under the punch so that the tapered edges of the die face the four set screws. Lower the punch holder so that the punch enters the die hole. Tighten four set screws against tapered edges of die so that the punch is centrally located in the die hole. Holddown (stripper) must be attached in place to allow for stripping of stock off the punch. If edge of die hole becomes worn, top of die may be ground to restore sharp edge.

### SHARPENING BLADES:

Only the top cutting edge of the blades should be ground — lengthwise, and with about a 5° negative angle. Blades should be replaced if the inside surfaces become chipped, or when the blades have been ground down to the point where they no longer engage when in the full open position.

OCCASIONAL OILING IN THE OIL HOLE AT THE TOP OF THE UNIT IS RECOMMENDED. ALL OPERATING PARTS SHOULD BE KEPT CLEAN AND PROTECTED AT ALL TIMES FROM RUST.

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